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Part No. P0937236 02.1

Business Communications Manager 2.5

DECT Installation and Maintenance Guide

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DECT regulatory information

CE	The CE Marking on this equipment indicates compliance with the following: This device conforms to Directive 1999/5/EC on Radio Equipment and Telecommunications Terminal Equipment as adopted by the European Parliament And Of The Council.	

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Hereby, Nortel Networks declares that Enterprise Edge/ Business Communications Manager Model No. NT7B10xxxx, is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

The C4010/C4020 handset is in compliance with Council Recommendation 1999/519/EC.

The DECT Base Station shall be cabled from host PBX controller card via individually screened paired cable.

The DECT standard is an integrated solution for cordless communication services based upon these ETSI specifications:

- ETS 300-175: Digital Enhanced Cordless Telephone Common Interface
- ETS 300-176: Digital Enhanced Cordless Telephone approval test specification
- ETS 300-444: Digital Enhanced Cordless Telephone General Access Profile

The DECT module provides an interface to the [Product Name (long)] for cordless handsets through a radio link with a base station connected directly to the DECT module. The interface is created by linking four BRI loops and a Mercator C8 PBX through a BRI within the module circuitry.

Electromagnetic compatibility

DECT standard complies with the following safety and electromagnetic compatibility recommendations:

- ETS 300329: Radio Equipment Systems; Electromagnetic Compatibility for Digital Enhanced Cordless Telephone.
- EN 60950: Safety of Information Technology Equipment.
- EN 55022: Electromagnetic Compatibility for Information Technology Equipment.

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Preface

This guide describes how to install and initialize a DECT system. Information in these chapters explains:

- how to set up and operate the DECT media bay module
- how to set up and operate the radio base stations
- how to subscribe the cordless handsets to the system

To use this guide, you must:

- be a Nortel Networks installer with Business Communications Manager certification
- know basic Nortel Networks terminology
- have a working Business Communications Manager system that is compatible with the DECT application

Symbols Used in this Guide

This guide uses symbols to draw your attention to important information. The following symbols appear in this guide:

Note: Note Symbol

A note alerts you to important information.

Tip: Tip Symbol

A tip adds general information pertinent to the current process.

Alerts you to ground yourself with an antistatic grounding strap before performing the maintenance procedure.

Alerts you to remove the Business Communications Manager and Business Communications Manager Expansion Cabinet power cords from the a.c. outlet before performing the maintenance procedure.

Caution: Caution Symbol

Alerts you to conditions where you can damage the equipment.

Danger: Electrical Shock Hazard Symbol

Alerts you to conditions where you can get an electrical shock.

Warning: Warning Symbol

Alerts you to actions that can make the system non-operational.

Text Conventions Used in This Guide

This guide uses the following text conventions:

`bold Courier text`	Indicates command names and options and text that you need to enter in a command-line interface. Example: Use the **`dinfo`** command. Example: Enter **`show ip {alerts|routes}`**.
italic text	Indicates file and directory names, new terms, book titles, Web addresses, and variables in command syntax descriptions.
bold text	Indicates command names, screen titles, options and text that you need to enter in a graphical user interface (GUI).
angle brackets (< >)	Indicates a keyboard key press or simultaneous key presses i.e. <ENTER> or <CTRL j>

Acronyms

This guide uses the following acronyms:

AC	Authentication code
ADPCM	Adaptive differential pulse code modulation
ARI	Access right identity
BRI	Basic rate interface (module)
DECT	Digital enhanced cordless telecommunications or Digital European cordless telephone
DID	Direct inward dial
DSAA	DECT standard authentication algorithm
DTM	Digital trunk module
EIC	Equipment installation code
FPN + FPS	Fixed part number and fixed part sub-number

ISDN	Integrated services digital network
LAL	Location area level
LED	Light-emitting diode
MWI	Message waiting indicator
PARI	Primary access right identity
PARK	Portable access right key
PARK{y}	PARK with PLI y
PBX	Private branch exchange
PLI	Park length indicator
PSTN	Public switched telephone network
RFPI	Radio fixed park identity
RSSI	Radio signal strength indicator
SARI	Secondary ARI
TCM	Time compressor multiplexor
WAN	Wide area network

Related Publications

For more information about the Business Communications Manager and related media bay modules, extension equipment, and the applications and software on the system, refer to the following publications, which are located on the CD that came with your Business Communications Manager 2.5 system or upgrade:

- *Business Communications Manager 2.5 Installation and Maintenance Guide* describes the process of installing and maintaining the Business Communications Manager equipment. The book includes descriptions of the available modules.
- *Business Communications Manager 2.5 Programming Operations Guide* describes how to program the Business Communications Manager equipment.
- If your Business Communications Manager has an internal voice mail system, refer to the documents specific to your system for setting up voice mail for your DECT handsets. If your system is part of a network connected to a Meridian system voice mail, refer to the Meridian voice mail documentation.

Chapter 1
DECT System Overview and Requirements

The DECT system provides the Business Communications Manager with the ability to connect cordless telephones to the system for use within the local area.

There are specific Business Communications Manager profiles that can use this equipment. Refer to "Checking the System Region" on page 19. Other profiles are for countries that have other technology for this purpose.

Warning: Do not attempt to change a region setting on an active system. This can cause the system to reset and lose data.

This chapter describes the DECT system components and provides an overview of the installation process. It also includes instructions for ensuring that your Business Communications Manager is set to the correct profile to accept and work with the DECT equipment.

Deployment and site preparation details are provided in a separate document. This chapter provides a brief overview of this task, as well as the specifications for the components.

Finally, the chapter provides an overview of system operations. This includes the load required on the Business Communications Manager and general commands you require to work on the DECT interface.

Figure 1 shows a graphic representation of the components of the system.
Table 1 on page 18 describes the three main hardware components of the DECT system.

Figure 1 Integrated DECT service

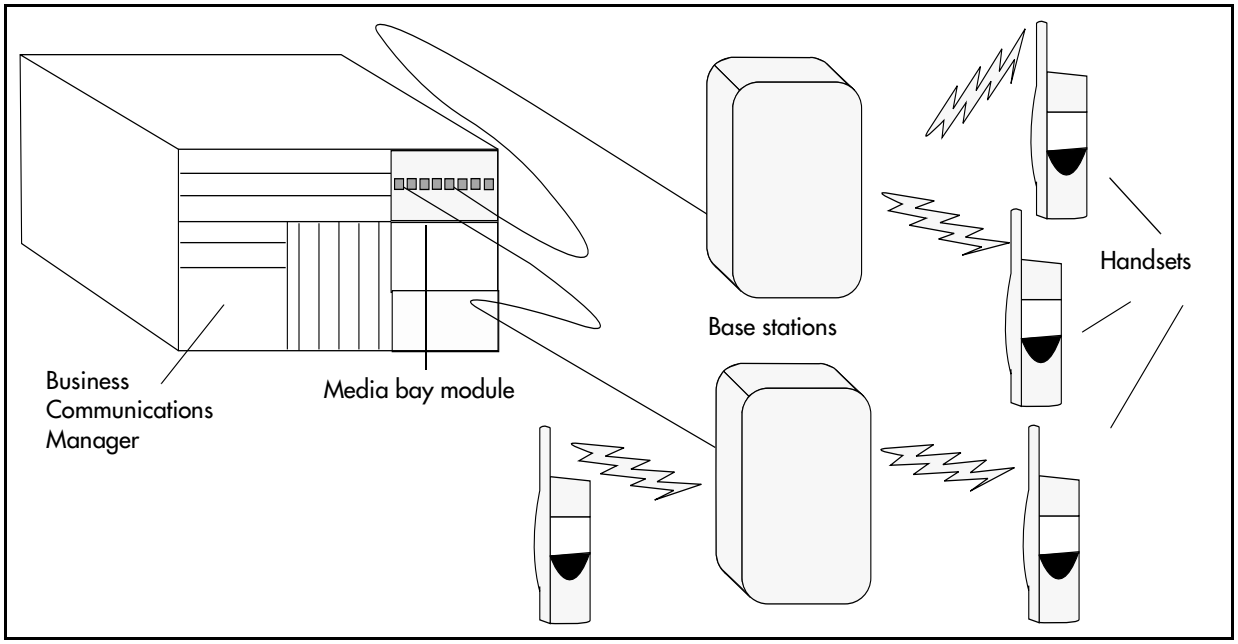


Table 1 Hardware components of the DECT system (continued)

Component	Function
DECT media bay module	The module connects up to eight radio base stations. Use the Business Communications Manager Unified Manager application to initialize and program the module. Within the module, four BRI ISDN loops allow up to eight simultaneous conversations. NOTE: Each Business Communications Manager system can support one DECT module.
M6241 Radio base station	Each base station provides radio coverage for a prescribed area. A group of base stations make up a cell. Each base station can support up to four simultaneous calls. The radio base stations also offer antenna diversity. Use the site survey to determine the number of base stations required to cover the area. Refer to "DECT Base Station Deployment Planning" on page 22.
DECT cordless handset C4010 and C4020	Each handset provides the user with telephony features remote from the land set. This book contains only the registration operations for the set. Refer to the user manuals that came with your handset for operational details. Up to 32 handsets can be assigned to each DECT system.

DECT Features

The following list describes some of the special features of the DECT system.

- The DECT module contains four BRI ISDN-S loops. The Business Communications Manager assigns four loop records in the Unified Manager when the module is installed, based on the DIP switch settings for the module.
- The cordless handsets are identified with DNs in the Unified Manager. They can be assigned answer DNs to link them with stationary sets.
- The numbering plan and call routing defined in the Business Communications manager must agree with the entries in the DECT interface.

Business Communications Manager Requirements

The DECT system only works with a Business Communications Manager system that has been set to a compatible regions. Confirm that this has been done before you attempt to install the system. Regions are discussed in the *Business Communications Manager 2.5 Programming Operations Guide*.

This book describes the handset directory number (DN) system based on the default setup, where the Start DN is 221 and the DN length is three digits. If your system has a different DN structure, use the tables provided to translate the DNs listed to match those of your system.

Examples of DN structures:

If your Start DN is 221 but you require a five-digit DN, the system automatically creates a Start DN of 22221 when you specify a five-digit DN at startup.

If your Start DN needs to start with a specific number, change the Start DN after you specify the DN length at startup. For instance, if your Business Communications Manager is part of a CDP (Coordinated Dialing Plan) network with five-digit DNs, your system must have a unique first DN digit, so you would specify the exact Start DN, in this case, something like 31111.

Checking the System Region

If you experience problems installing DECT on your system, check the region for which the system is set.

Note: DECT systems can be installed in countries that can run the following region profiles: UK, Australia, Sweden, Denmark, Holland, Norway, Italy, Germany, Spain, Switzerland, France, Global, Hong Kong.

Refer to the *Business Communications Manager 2.5 Programming Operations Guide* appendices for the chapter that lists all the regions.

Caution: You must select a region that reflects the geographical location of the Business Communications Manager.
If you choose the wrong region, the Business Communications Manager system does not communicate correctly with the Public Switched Telephone Network.

This procedure describes how to ensure that the Business Communications Manager is set to the correct region for the DECT module.

1. Open the Unified Manager for your Business Communications Manager system.
2. On the navigation tree, click **Diagnostics/MSC.**
3. On the top menu, click on **Configuration**.
4. Click **System startup.**
5. Ensure that the Region box displays the correct region. If not, select a region from the list.

Note: When you select a new region, the Template box is disabled. You must restart the system before the templates for the selected region are available.

a Click **OK** to apply these changes.

Note: The system displays a warning that the system will restart and that the default programming values will be restored.

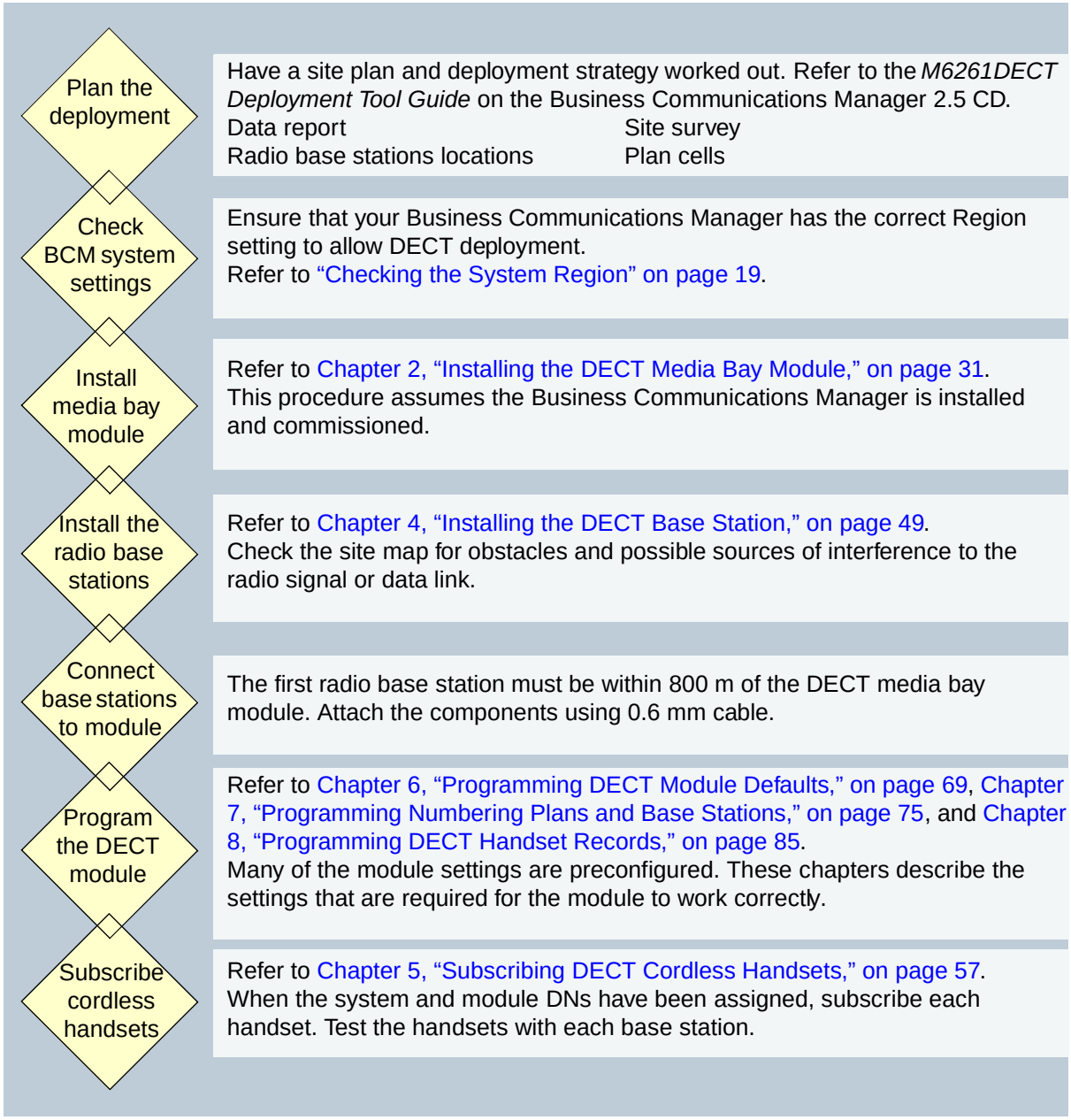
b Click **Cold Start** to restart the Unified Manager.

6 Continue with the DECT deployment.

Setup Process Overview

Figure 2 provides an overview of the actions required to successfully set up the DECT integrated system:

Figure 2 Setup process for the DECT system


Plan the deployment
Have a site plan and deployment strategy worked out. Refer to the M6261DECT Deployment Tool Guide on the Business Communications Manager 2.5 CD.
Data report
Site survey
Radio base stations locations
Plan cells
Check BCM system settings
Ensure that your Business Communications Manager has the correct Region setting to allow DECT deployment.
Refer to "Checking the System Region" on page 19.
Install media bay module
Refer to Chapter 2, "Installing the DECT Media Bay Module," on page 31.
This procedure assumes the Business Communications Manager is installed and commissioned.
Install the radio base stations
Refer to Chapter 4, "Installing the DECT Base Station," on page 49.
Check the site map for obstacles and possible sources of interference to the radio signal or data link.
Connect base stations to module
The first radio base station must be within 800 m of the DECT media bay module. Attach the components using 0.6 mm cable.
Program the DECT module
Refer to Chapter 6, "Programming DECT Module Defaults," on page 69, Chapter 7, "Programming Numbering Plans and Base Stations," on page 75, and Chapter 8, "Programming DECT Handset Records," on page 85.
Many of the module settings are preconfigured. These chapters describe the settings that are required for the module to work correctly.
Subscribe cordless handsets
Refer to Chapter 5, "Subscribing DECT Cordless Handsets," on page 57.
When the system and module DNs have been assigned, subscribe each handset. Test the handsets with each base station.

DECT Base Station Deployment Planning

The DECT base stations must be deployed to provide full site coverage with the maximum traffic capacity, using the minimum number of base stations.

There are two tasks involved in arranging this:

- Surveying the site: the site survey involves gathering information to determine customer requirements and the number of cells needed to support the traffic.
- Planning deployment: deployment plans establish the best locations for the radio base stations.

Site surveying and deployment planning are complex tasks, undertaken only by trained personnel. Refer to the *M6261DECT Deployment Tool* and site planning guide for detailed Site planning and deployment.

DECT Radio Base Station

The Business Communications Manager can support one DECT media bay module.

A cable attached to an RJ45 connector in the face of the DECT module connects to the base station RJ45 connector. This supplies the data and power.

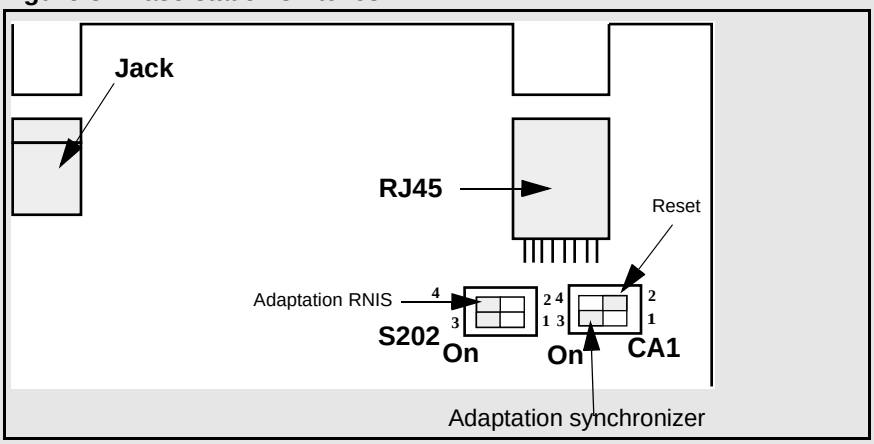
The base station comes with two internal antennas to provide signal diversity. Some types of external antennas can be substituted, depending on site requirements.

Table 2 describes the function of the parts of the base station.

Table 2 Parts of the DECT radio base station configurations

Part	Description of function
Base stations	The area covered by the base station depends on the radio range. Base stations manage the links with the cordless handsets within that range.
Cables	The cable includes two telephone pairs. One transmits the signal. One receives the signal.
Connectors	The base station uses a female RJ45 to connect to the cable.
Switches	There are two configuration switches: the CA1 and the S202. • The CA1 has two switches, labelled 1/2 and 3/4. Set 1/2 to On to enable the adaptation resistor for the synchronization pair. Set 3/4 to On to enable base station Reset. Set 3/4 to Off to run Reset by S0 interface level 1. • The S202 has two switches, labelled 1/2 and 3/4. Set 1/2 and 3/4 to On to enable the 100 ohm adaptation resistors for the S0 pairs. Refer to Figure 3 on page 23.

Table 2 Parts of the DECT radio base station configurations (continued)

Part	Description of function
	Figure 3 Base station switches 

External Antennas

Three kinds of external antennas can be added:

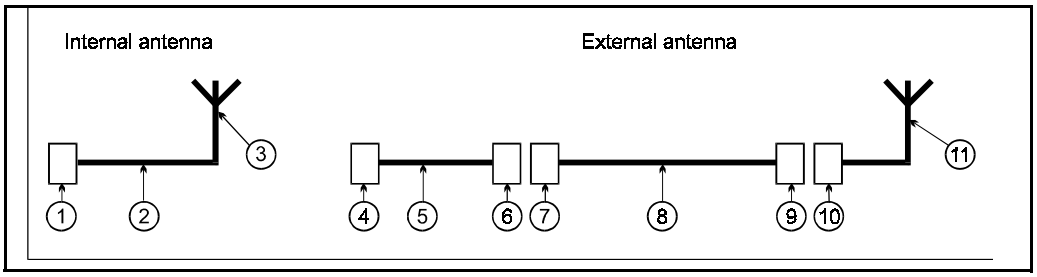
- The MA431X23 is omnidirectional with an extension cord.
- The MA431X24 is omnidirectional with an extension cord.
- The MA821X12 is bidirectional with a 50-cm cable.

The HT6176A is an adapter for outdoor antennas.

Warning: Do not add any more cables to the MA821X12, or the gain and receptivity will suffer. Place this antenna as close to the base station as possible.

The MA431X23 and X24 antennas can be installed further from the base station. Ensure that the coaxial cables linking the antennas with the base stations provides low attenuation. Figure 4 illustrates two configurations:

Figure 4 Antenna configurations



- The internal antenna incorporates an MMS connector (1), one coaxial cable KX21 (2) and the radiating element (3). The antenna gain is 2 dBi.

- The external antenna is connected via a cord (4-5-6) which incorporates an MMS male connector (4), coaxial cable KX21 (5) and a TNC female connector (6). The manufacturer specifies losses of less than the guaranteed dB value. Losses are actually of the order of 0.7 dB at 2 GHz.

  The extension cord conveying the signal to the antenna incorporates a TNC male connector (7), low loss coaxial RG58cu cable (8) and N male connector (9). The antenna (11) is secured to the extension cord using N female connector (10).

The losses generated by this extension cord are summarized in Table 3:

Table 3 Generated losses with extension cord added

Element	Losses at Frequency	Estimated losses
RG58cu	0.65dB/m at 2GHz	
TNC	0.2 dB at 9GHz	0.1 dB
N	0.15 dB at 10GHz	0.1 dB

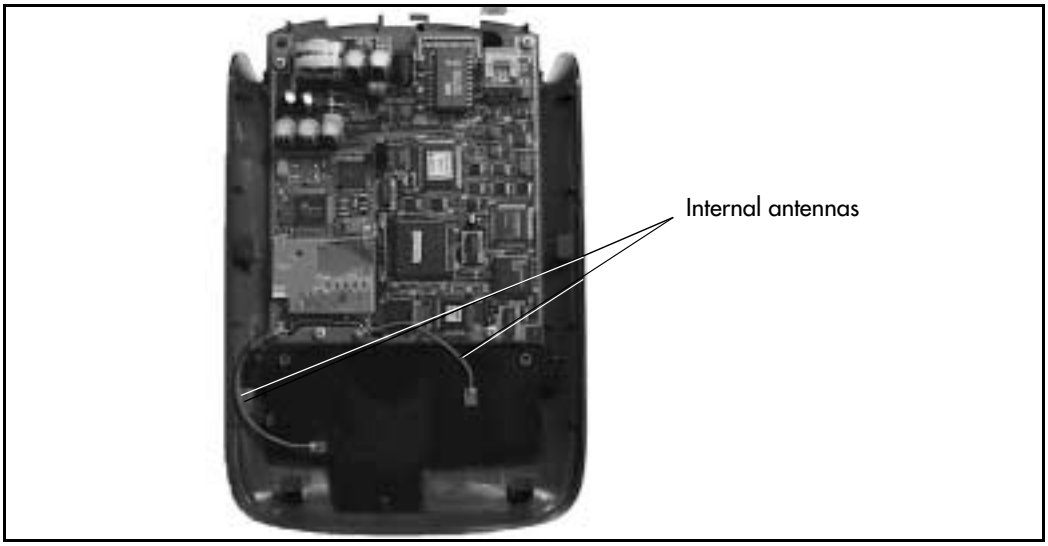
- The maximum length of the extension cord is 2.8 meters.
- The MA432X23 external antenna with an extension cord performs approximately in the same way as an internal antenna, except for the polarization diversity.
- The MA432X24 provides a 2 dB gain compared to the internal antenna.

Specifications for DECT Radio Base Stations

This section describes the radio base station specifications.

Figure 5 shows the base station with the top cover removed.

Figure 5 Inside the DECT radio base station



The following specifications apply to DECT radio base stations:

- frequency band: 1880 -1900 MHz
- number of radio channels: 8
- transmission power: 250 mw (peak)/10 mw (average)
- instantaneous throughput of the channel: 1152 Kb/s
- signaling channel throughput (D channel between the module and the base station): 16 Kb/s.
- antenna type: omni-directional [one-way] or directional integrated or external antennas
- coverage range: from 10 to 30 metres (office environment), up to 300 metres (open air)
- radio base station operating temperature: +5 to +45× C
- number of simultaneous calls per radio base station: two or four
- base station synchronization: yes

Base Station Notes:

Here are some general-information notes about the base station:

- Do not install more than two overlapping radio base stations per cell.
- Do not apply any new paint scheme to the plastic shell without written approval from Nortel Networks.
- Use the Unified Manager to perform resets of the base station.
- Signal processing functions for the four-channel radio base station are ported to the MBM. In this case, the interface transports four 32 Kb/s ADPCM coded communications as well as 16 Kb/s signaling channel.

Climatic Conditions

The DECT base station can tolerate the following conditions:

Operational:

- Temperature: 5 to 45 degrees C.
  - 20 to +60 with a special cabinet
- Relative humidity: 10 to 80 per cent, not condensing.

Storage:

- Temperature range: - 10 to 60 degrees C.
- Relative humidity range: 10 to 90 per cent, not condensing.

Power Supply

The ISDN interface in the DECT media bay module enables the base stations to be powered through the cable connection between the DECT and the base station. The remote power supply is limited to 100 mA on the DECT interface, which corresponds to an available power of 4 W at 48V.

The radio base station can also be powered using a local a.c./d.c. mains power supply unit, PN 840 B. Use a local supply unit for no more than two radio base stations in any given cell.

Description of the Connection

DECT base stations connect to DECT media bay modules using a cable containing two twisted pairs. This cable connects to RJ45 connectors on the components. The connection at the DECT position corresponds to an equipment number on the two cards on the DECT module that control the base station interaction. If you assign specific base stations to equipment numbers, you must ensure that base station is connected to the appropriate RJ45 jack on the DECT module.

DECT Cordless Handsets

Check for small metal objects in the DECT Handset earpiece/mouthpiece before using the handset.

Do not store or locate flammable liquids, gases, or explosive materials in the same compartment or vicinity as the cordless handset, its parts or accessories.

This section describes the features provided by the C4010 and C4020 cordless handsets. These handsets were developed to work with DECT systems.

Other cordless handsets can be used with the DECT system. The system features available to other handsets depends on how the handset is configured, and how compatible it is with the signals transmitted from the DECT module. As well, some features such as call display also require the proper line configurations at both the local and telco end of the line.

Site Configurations

Nortel Networks provides one PARI number on the DECT module that all the base stations share. Access is authorized by matching the PARI number and the PARK number registered in the Other multi-site configurations.

DECT Call Paths

The DECT module provides a telephony path separate from the Business Communication Manager system. This means there are three possible paths for a call to take.

- A DECT handset-to-handset call is routed from the calling handset, through the DECT module C8, into the receiving handset.
- A DECT handset-to-Business Communications Manager set call is routed from the calling handset, into the C8, and into the Business Communications Manager. The Business Communications Manager then routes the call through the appropriate station module to the receiving set.
- A DECT handset-to-external call is routed from the calling handset, into the C8, and into the Business Communications Manager. The Business Communications Manager then routes the call through the appropriate trunk module out to the public network. This is the same route a call from a DECT handset to a set on a private network would use. The difference is that the user enters a different destination code.
- If a DECT handset transfers a call, the DECT C8 processes the transfer and creates a new call destination. The call remains routed through the C8, even though the DECT handset is no longer involved in the call.

DECT Programming Overview

Here are some important points about using DECT on your Business Communications Manager.

- The Business Communications Manager must be configured with a region setting that provides DECT support.

Note: Valid DECT region settings:

Australia, Denmark, France, Germany, Global, Holland, Hong Kong, Italy, Norway, Spain, Sweden, Switzerland, Taiwan, United Kingdom

- The system default password is set to `insta`. You can delete or change this password to suit your needs.
- Default language is English.
- Disable the base stations before a firmware upgrade. Put the base stations back in service in sequence.
- To subscribe handsets, the base stations must be set to accept handset recording.
- The handset DN must also be set into recording mode before the handset can be subscribed.
- The system uses data links.
- Within the DECT interface, numbers enclosed in ( ) indicate length of parameters.

Note: Refer to the *Business Communications Manager 2.5 Programming Operations Guide* to configure handset features for each handset DN.

DECT Interface Commands

Table 4 shows the main commands that are needed to navigate the DECT interface.

Table 4 DECT interface commands

Command	Explanation
10 (no return)	Sets the initial interface to VT100. This command is not always necessary.
Ctrl U	Goes to main menu.
Ctrl J	Moves up one level of menus.
space bar	Toggles between items within screens.
Esc (alpha commands)	ESC M = more A list displays at the bottom of each screen.
Del	Deletes item backwards.
Note: Data changes take effect immediately! There is no REDO option.	

Numbering plan syntax

Table 5 explains how the syntax for the numbering plan works:

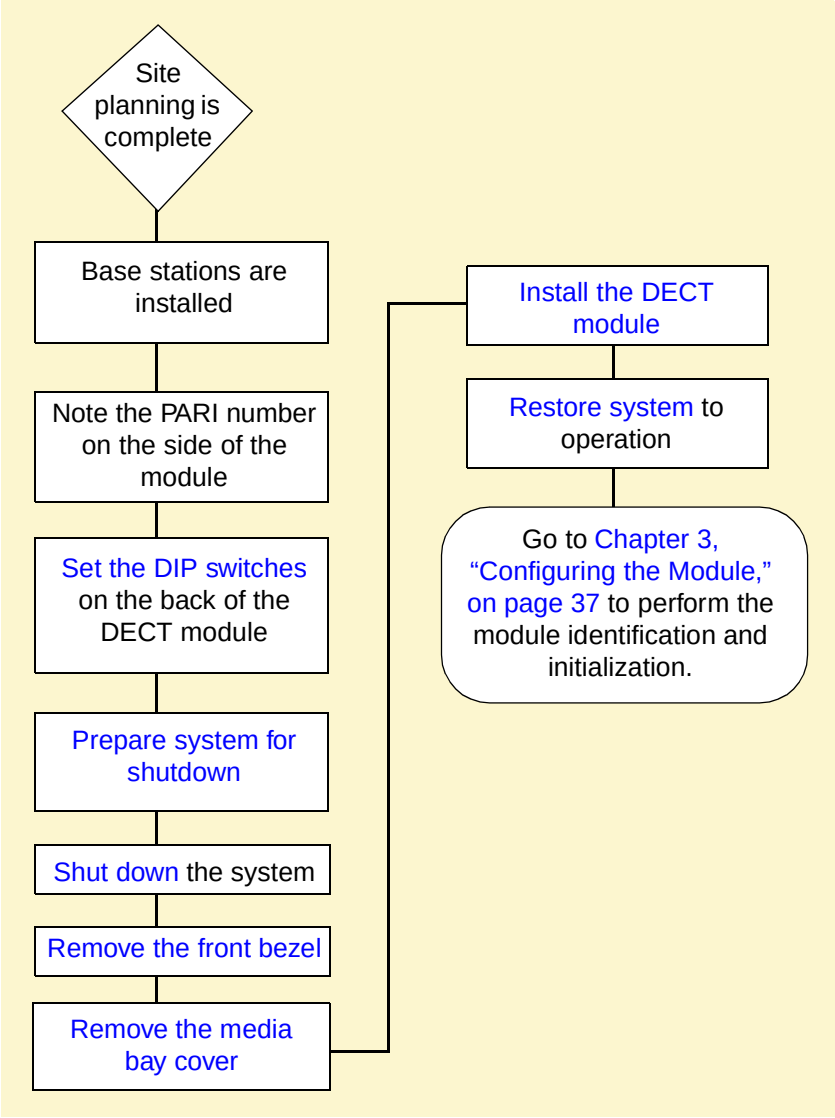
Table 5 Numbering plan syntax

Number Plan width	Entry	Means
(2)	1-2	10 to 29
(3)	12-3	120 to 139
(5)	1623-4	16230 to 16249
(5)	1-2	10000 to 29999

Chapter 2
Installing the DECT Media Bay Module

This section describes how to install the DECT media bay module in the Business Communications Manager. Figure 6 shows an overview of the process.

Figure 6 Process for installing the DECT module


Site planning is complete
Base stations are installed
Note the PARI number on the side of the module
Set the DIP switches on the back of the DECT module
Prepare system for shutdown
Shut down the system
Remove the front bezel
Remove the media bay cover
Install the DECT module
Restore system to operation
Go to Chapter 3, "Configuring the Module," on page 37 to perform the module identification and initialization.

Setting the DIP Switches

This procedure describes how to set the DIP switches for the DECT media bay module.

Ensure that you wear equipment to properly ground yourself while handling any of the electronic parts to this system.

1. Take the media bay module from its box.
2. Inspect the module for damage.
3. Make a note of the PARI number, which is located on the side of the module.
4. Determine which DS30 channel (bus) number to use for the module.

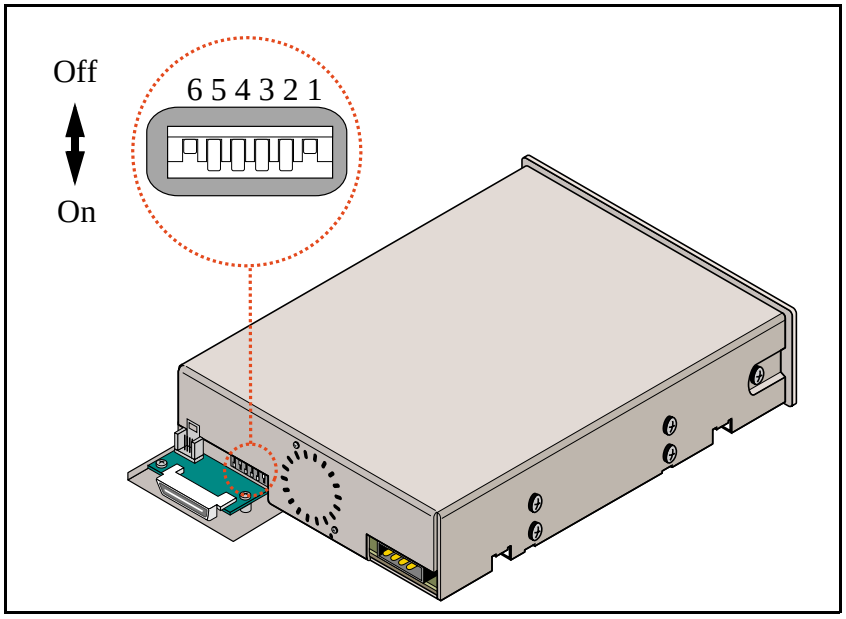
Note: Remember that the channel you choose cannot conflict with a location already assigned to an existing media bay module.

Use Bus 6 or 7 if they are available.

5. Set the DIP switches, located on the back of the DECT module to the DS30 channel number. Set the offset to 0 (on).

- Figure 7 shows the location of the DIP switches on the DECT module.

Figure 7 Locating the DECT media bay module dip switches



- Table 6 shows the switch settings for each module number. The offset number is always 0.

Table 6 DECT switch settings

Select DS30 channel	Select offset	Set the switches						Use these DNs on nre 2.5 systems	Use these DNs on updated 2.0 system	**Customized DN range
		1	2	3	4	5	6			
2	0	on	on	on	on	on	on	597-624*	501-532*	
3	0	on	on	on	on	on		597-624*	501-532*	
							off			
4	0	on	on	on	on		on	597-624*	501-532*	
						off				
5	0	on	on	on	on			597-624*	501-532*	
						off	off			
6	0	on	on	on		on	on	597-624*	501-532*	
					off					
***7	0	on	on	on		on		597-624*	501-532*	
					off		off			

*If you need more DNs, use DNs in the portable DNs, starting at 565. Ensure no other devices are assigned to these DNs before you use them.

**Note: The extensions listed are based on a three-digit DN with a Start DN of 221. If your system has longer DNs or a different Start DN, enter the range in the blank column.

***If your system has a 3/5 DS30 channel split, channel 7 is not available to media bay modules. Refer to the *Programming Operations Guide* for further information on this feature.

Note: If you replace a module, set the DIP switches for the new module to exactly the same settings as the removed module.

TIP: Numbering conventions:

This document assumes three-digit DNs, starting with a Start DN of 221. If your system has a different numbering plan, adjust the numbering accordingly. If you follow a different numbering plan, ensure that you update all the DN settings described in Chapter 8, “Programming DECT Handset Records,” on page 85.

Use Table 7 to note the settings you chose.

Table 7 Module settngs

Module PARI number:
DS30 channel:
DIP switch settings:
Notes:

Installing the DEC Module

After you have set the DIP switches, you can install the modules. You need to shut down the system to install the module, therefore, choose a period when the Business Communications Manager is not busy.

Remember to warn users that the system will be down for a short period.

1 Ensure the Business Communications Manager base unit is properly shut down.

a From the Unified Manager application, click **System**, then go to the **Logoff** menu and click **Shutdown**.

For detailed shutdown information, refer to the *Business Communications Manager 2.5 Programming and Operations Guide*.

b Disconnect all the cables from the front of the Business Communications Manager base unit and expansion unit, if there is one.

c Disconnect the base unit and expansion unit power cords from the a.c. outlet.

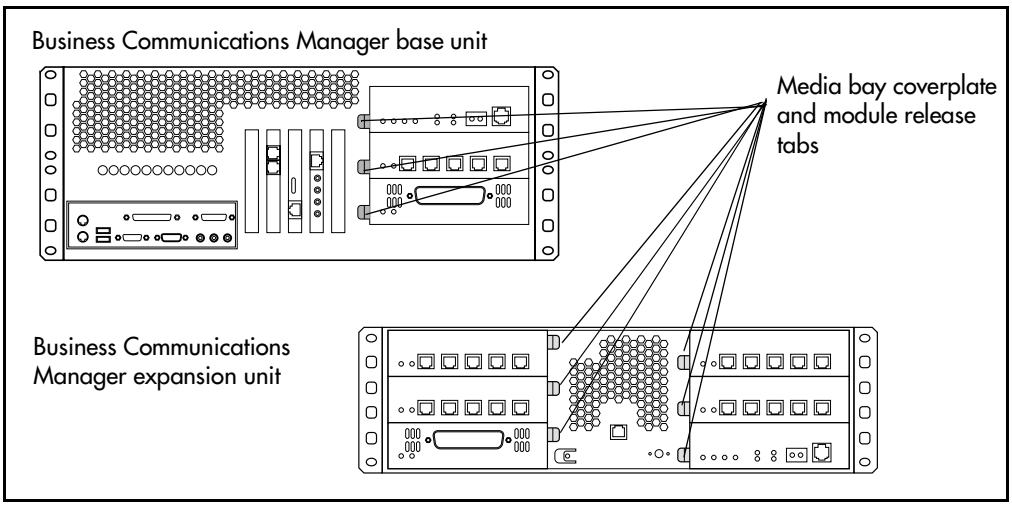
Danger: Failure to follow these steps can result in damage to the system or the module.

d Remove the front bezel from the front of the base unit or expansion unit where you plan to install the DECT module.

2 Remove the blank cover from the module bay.

To remove the bay cover, pull the tab beside the module bay. This pushes the cover forward. Figure 8 shows the base unit and expansion unit front bezels.

Figure 8 Release tabs for the module bays


Business Communications Manager base unit
Media bay coverplate and module release tabs
Business Communications Manager expansion unit

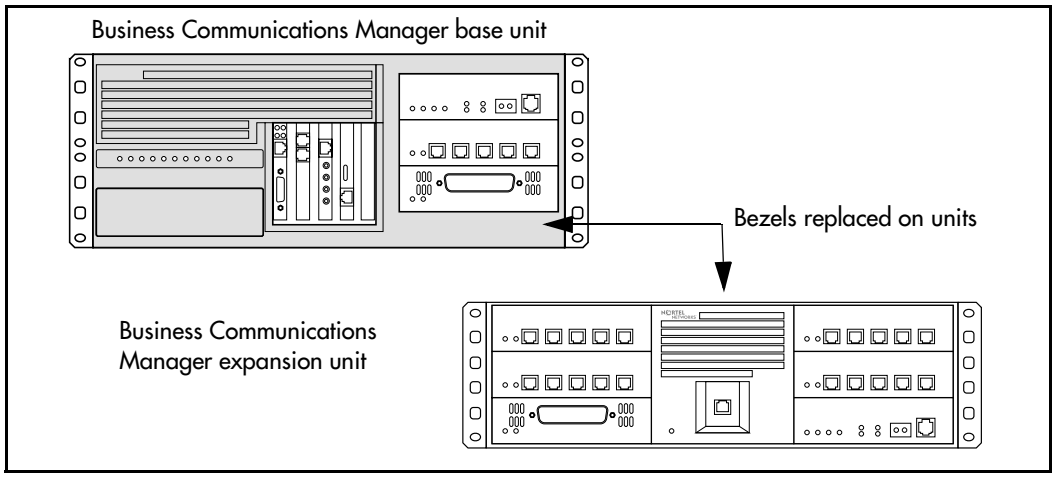
3 Insert the module into the open bay and push until the module clicks into the backplate.

Note: The module protrudes slightly. After the front bezel is replaced, the face of the module sits flush with the front of the unit.

4 Replace the front bezel on the Business Communications Manager or the expansion unit.

Figure 9 shows the base unit and expansion unit with the front bezels replaced.

Figure 9 Front bezels replaced on units


Business Communications Manager base unit
Bezels replaced on units
Business Communications Manager expansion unit

Restoring the system

After the module is installed, restore the Business Communications Manager operations. Then connect the base station cables to the module.

1 Inspect the system to ensure all components are in place.

2 Reconnect the a.c. power cords for the Business Communications Manager base unit and the expansion unit, if there is one.

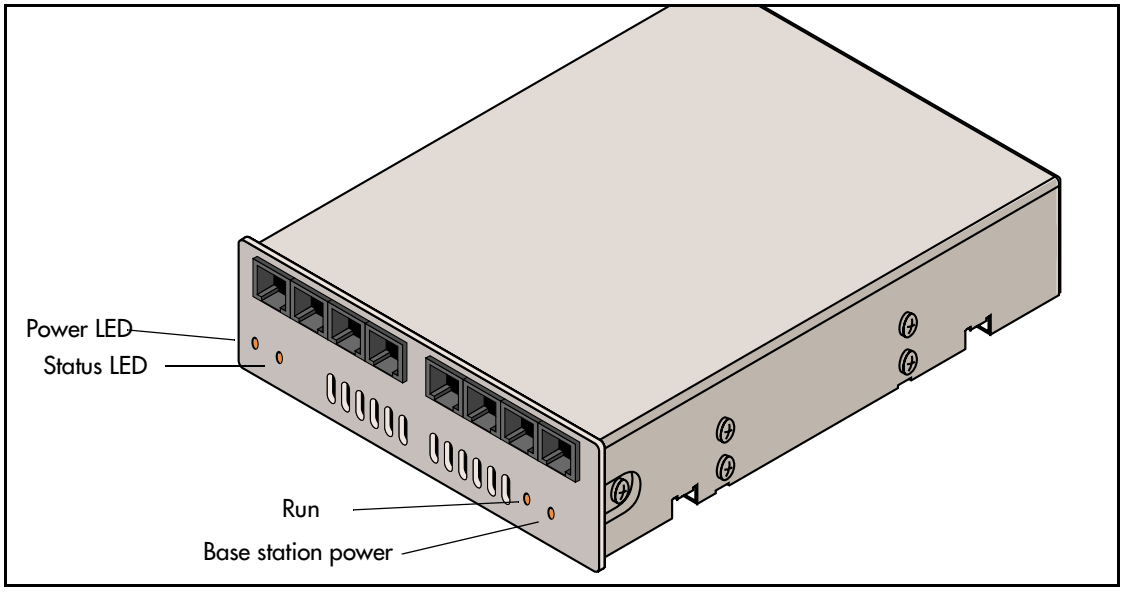
3 Reconnect all the connections to the front of the units.

Warning: Failure to follow these steps can damage the system or the module.

4 Monitor the LEDs on the front of the base unit to ensure the system reboots properly. Refer to Figure 10. This process takes a few minutes.

- Power (working status)
- Status (hardware status)
- Run (CPU of the DECT C8) (blinks when stable)
- 48 V for the base station jacks

Figure 10 Locating the LEDs on the DECT module face



5 When the power and status LEDs on the module are solid green, you are ready to continue with the module configuration. Refer to Chapter 3, “Configuring the Module,” on page 37,

If the lights are off or are blinking, refer to “Monitoring the DECT Module LEDs” on page 106 for troubleshooting information.

Chapter 3
Configuring the Module

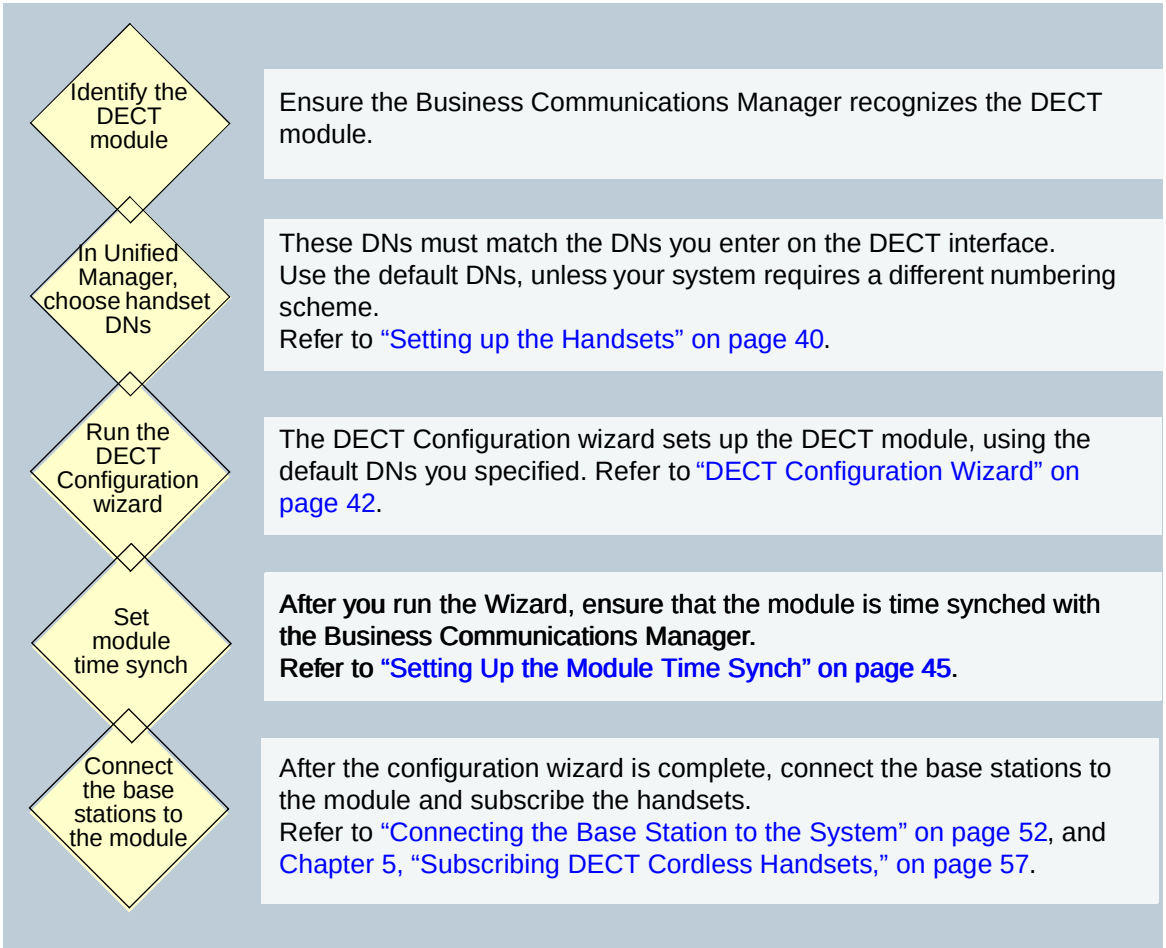
There are some preliminary steps that you must do within the Business Communications Manager Unified Manager application before you run the wizard that configures the DECT module. This chapter describes how to ensure that the Business Communications Manager system sees the DECT module. It also describes how to find and manage the DNs designated for DECT handsets.

When the Unified Manager settings have been done, you can run the DECT Configuration wizard. This wizard configures the DECT module. It also turns on one of the base station ports to allow handset subscription.

Handset subscription (mobile recording) can also be turned on and off using the DECT Mobile Recording (handset subscription) wizard, which is also described in this chapter.

Figure 11 describes the steps you need to take to identify and configure the DECT module.

Figure 11 Process for identifying and configuring the DECT module


Identify the DECT module
Ensure the Business Communications Manager recognizes the DECT module.
In Unified Manager, choose handset DNs
These DNs must match the DNs you enter on the DECT interface.
Use the default DNs, unless your system requires a different numbering scheme.
Refer to "Setting up the Handsets" on page 40.
Run the DECT Configuration wizard
The DECT Configuration wizard sets up the DECT module, using the default DNs you specified. Refer to "DECT Configuration Wizard" on page 42.
Set module time synch
After you run the Wizard, ensure that the module is time synched with the Business Communications Manager.
Refer to "Setting Up the Module Time Synch" on page 45.
Connect the base stations to the module
After the configuration wizard is complete, connect the base stations to the module and subscribe the handsets.
Refer to "Connecting the Base Station to the System" on page 52, and Chapter 5, "Subscribing DECT Cordless Handsets," on page 57.

Confirming the DECT Module

After the DECT module has been installed and the system has rebooted, you must identify the module to the Business Communications Manager system.

Use this procedure to ensure the system recognizes the module type.

1. On the navigation tree, click the key beside Resources.
2. Click on **Media Bay Modules**.
3. Click on the Bus number for the DECT module.
4. Ensure that **Programmed Bus Type** is set to Trunk Module.
5. Click the key beside Modules on Bus.
6. Click on **Module 1**.
7. Ensure that **Module Type** is set to DECT.
8. If you made changes, do the following, otherwise continue with step 9:
   a. Click on the Bus number again.
   b. Under **Configuration**, choose **Disable**.
   c. On the message box, click OK.
   d. Under **Configuration**, choose **Enable**.

   When the module is enabled, the **State** field reads: equipped.
9. At the bottom of the Resources list, click on the **DECT** heading,
10. Confirm the module name, or select the correct module.

Note: If the module does not immediately appear on the list, wait a few minutes and try again.
Note: If the system does not recognize the DECT module, the DECT heading under Resources will not appear.

Checking the Unified Manager Handset DNs

The DECT handset is considered an ISDN S device. Assign the handset to DNs within the default ISDN and DECT range. Ensure that you do not assign handset DNs that have already been assigned to other ISDN devices.

Note: Default DECT module DNs:

- New 2.5 Business Communications Manager: 597-624
- Upgraded 2.0 Business Communications Manager: 501-532

These defaults assume a system with a three-digit DN structure, and a Start DN of 221. If your system is different, use these numbers as guidelines to find the defaults to your system.

Note: If you need more DNs than are available in the default range, use the NA Portable DNs. Ensure these DNs are available before assigning them.

1. Open the Unified Manager.
2. From the menu, click **BCM/Services/Telephony Services/System DNs/All ISDN/DECT DNs.**
3. Click on the DN number you want to assign to the handset.
4. Under the DN number, click **General**.
5. When the General screen appears, ensure that the **DN Type** displays ISDN and DECT.
6. Repeat for all handset DNs.
7. Refer to “Setting up the Handsets” on page 40 for information about setting up the DN records.
8. When the records are set up, run the DECT Configuration wizard. Refer to “DECT Configuration Wizard” on page 42.
9. The configuration wizard also sets up the system to start subscribing handsets.
10. To turn off handset subscription (mobile recording), run the DECT Mobile Recording (Handset Subscription) wizard. Refer to “DECT Mobile Recording (Handset Subscription) wizard” on page 47.
11. To check the DNs against the DECT module DNs, refer to “Listing Mobiles” on page 90.

Setting up the Handsets

How you want to use the DECT handset will determine how you set up the handset DN record. This section describes the ways the handsets can be used.

Detailed configuration information is contained in the *Business Communications Manager 2.5 Programming Operations Guide*.

The DECT cordless handsets either can be set to ring in tandem with a stationary set, or configured to act as stand-alone sets. As well, the handsets can be configured as target lines to accept direct inward dial (DID) calls.

This following sections explain the Unified Manager settings required for each type of scenario.

Stand-alone Handset

A stand-alone set can be configured to only receive calls, or to both send and receive calls internally or externally.

Internal Calls

The DECT interface comes with a set of default DNs. After the handsets are registered to these DNs, and the DNs are activated, the handsets can be used to make calls between sets.

After the DECT handset DNs are added to the Unified Manager, the handsets can be used to make and receive calls internal to the Unified Manager system.

External Calls

The handset can be configured to have full send and receive capability to the public switched telephone network (PSTN), or, by using a target line, can be configured to receive calls only.

Assigning routes or lines

The Unified Manager automatically assigns all DNs with the default Pool A. This automatically allows calls through this line pool. This line pool can be deleted, and other pools added, depending on your requirements.

1. Open the Unified Manager.
2. On the navigation tree, click **BCM/Services/Telephony Services/System DNs/ All ISDN DECT DNs/DN ##**, where DN is the DN of the DECT handset.
3. Ensure you have a line pool set up that you want to use.
4. Click **Line Pool Access**, and click the **Add** button at the top of the column.

5 Click the line pool you want the handset to use to make and receive calls.

6 Repeat, as necessary.

Assigning target lines

If you want the handset to receive calls but not to be able to send calls, set up a target line for the handset.

Note: If you do not want the user to be able to dial out at all, ensure that no other lines or line pools are assigned to the set.

1 Open the Unified Manager.

2 On the navigation tree, click **BCM/Services/Telephony Services/Lines/Target Lines.**

3 Click a **target line number heading that is not already assigned**.

4 Click on **Trunk/Line** data.

5 Click on **Received Number**.

6 Enter the handset DN number.

7 On the navigation tree, click **BCM/Services/Telephony Services/System DNs/ All ISDN DECT DNs/DN <handset DN>.**

8 Click on **Line Access/Line Assignment**.

9 Click the Add button at the top of the navigation tree.

10 Add the line number of the target line in **Line** field.

11 Click **Save**.

12 Click on the **Line <target line number>** heading.

13 Ensure **Appearance** is set to Appr. & Ring.

Assigning Handsets to Fixed Telephone DNs

You can also associate the handsets with fixed sets. With this feature, the handset rings whenever the fixed set rings.

1 Open the Unified Manager.

2 On the navigation tree, click **BCM/Services/Telephony Services/System DNs/ All ISDN DECT DNs//DN ##**, where DN ## is the DN you want to assign to the handset.

3 Click **Answer DNs**.

4 Enter the DN number for the fixed set to be associated with the handset.

5 Press <Tab> to update the record.

6 Repeat this process for all handsets you want to assign.

Handset Feature Programming

The call features available to DECT handsets are described in “Handset System Features” on page 64. Programming for these features is the same as for other Business Communications Manager telephones with these features. Refer to the *Business Communications Manager 2.5 Programming Operations Guide* for instructions. Refer to the handset user manual for instructions on how to use the features.

About the DECT Wizards

These wizards will lead you through the necessary procedures to configure your DECT module and set up the module for subscribing the handsets.

If you need to change any of these settings after the wizards are run, refer to the specific procedure described in the following chapters.

DECT Configuration Wizard

Use this wizard to perform the initial configuration of a DECT module and to set up a base station to allow handsets to be subscribed to the system.

Note: At this point you have not yet connected the base station cables to the module.

The wizard collects current information about the DECT settings from the Business Communications Manager, and sends them to the DECT module. None of this information displays on the screen, except for the ISDN or DECT DNs.

Warning: Use this wizard ONLY for initial configuration, as it wipes out any previous DECT module information.

Refer to “Using the Wizards” on page 44 for the steps about how to run the wizard.

Before You Start

The following conditions are required before you run the wizard.

- The telephony (DNs and line access), routing information, and any line pool access coding must be configured on the Business Communications Manager.

Note: Any changes made after the wizard is run will not be reflected on the DECT module. This is an instance where you would need to go directly into the module settings and check or adjust the settings.

- The DECT module must have the factory default settings applied to it. If these have been changed in any way since the module was installed, you can reset the module through the Wizard.
- You must ensure that the Business Communications Manager recognizes the DECT module. Refer to "Confirming the DECT Module" on page 38.

You need to know the following information before you run this wizard:

• Do you want to reset the DECT module to the factory default settings? What is the PARI value that you copied off the side of the DECT module before it was installed?	**No Yes** (PARI value)
• How do you want to identify the DECT module?	(Install Name)
• Which base station do you want to enable to allow terminal subscription? Refer to "Identifying Base Stations" on page 87 for more information about numbering.	(base station) 6-0 6-1 6-2 6-3 7-0 7-1 7-2 7-3
• How many handsets will you be subscribing? Which DNs are assigned to these handsets in the Unified Manager?	(DN number) Yes (enable) No (no handset assigned)

Note: The Business Communications Manager provides up to 28 ISDN or DECT DNs. If you require more handsets, or if some of the DNs are already used for other equipment, you can change the DNs in the NA Portable range to ISDN or DECT.

This must be done before you run the Wizard, as the wizard only recognizes DNs with the ISDN or DECT label. Refer to "Checking the Unified Manager Handset DNs" on page 39 for more information about default DNs.

Using the Wizards

Wizards are accessed through the Wizard button that appears on the first page of the Unified Manager.

Warning: Ensure there is no one else using the tables the wizard will be using.

1 On the first page of the Unified Manager, click the Wizards button.

A new page appears, displaying all the types of wizards that can be used for the Unified Manager.

2 Click on the DECT Wizard button for the task you want to perform.

Note: If the system does not recognize the DECT module, these buttons do not appear. Refer to “Before You Start” on page 43.

3 Enter the required information into the fields on the wizards.

4 Click the Apply button on the screen to invoke the wizard.

Filling Out the DECT Configuration Wizard

The DECT Configuration wizard has three pages.

1 On the first page, you specify the DECT module information and the base station that you want to turn on to allow handset subscription. If you choose **None**, then all base stations are turned off.

2 The second page allows you to determine which DNs will be assigned to handsets. Scroll to the bottom of the page to find the **Next** button to move to the third page.

3 The third page provides a summary of the entries, with a list of the DNs you selected. The **Apply** button is on this page.

Setting Up the Module Time Synch

After you run the Configuration Wizard, you need to ensure that the module time is synchronized with the Business Communications Manager. Since the module time can drift out of synch, you can use this BRU tool to set up a schedule for daily time synchronization.

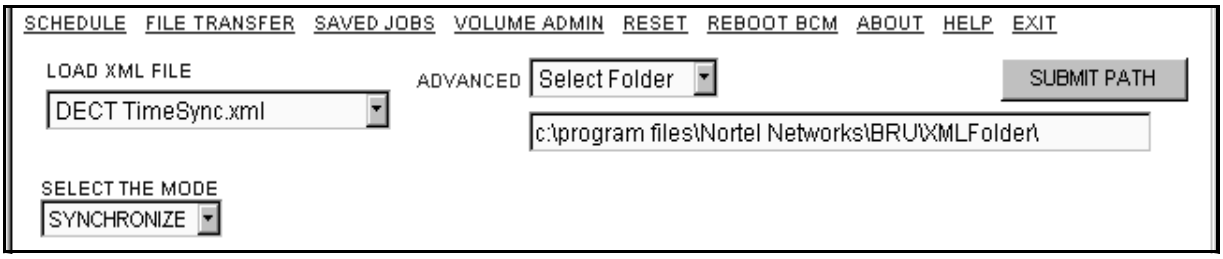
The time can also become unsynchronized if you perform firmware uploads. As well, if you change the password, you must re-establish the time synch schedule.

Follow these steps to set up a time synch schedule:

1. Do the following to check that the correct DECT module is selected:
   - **a** On the navigation tree, click the **Resources** key.
   - **b** Click on **DECT**.
   - **c** Confirm the module name, or select the correct module.
2. At the top of the navigation tree, click on **BCM**.
3. Under **Tools**, click on **BRU**.
4. At the prompt, enter the user name and password for the supervisor account.

   A new Internet Explorer (IE) window appears. Refer to Figure 12.

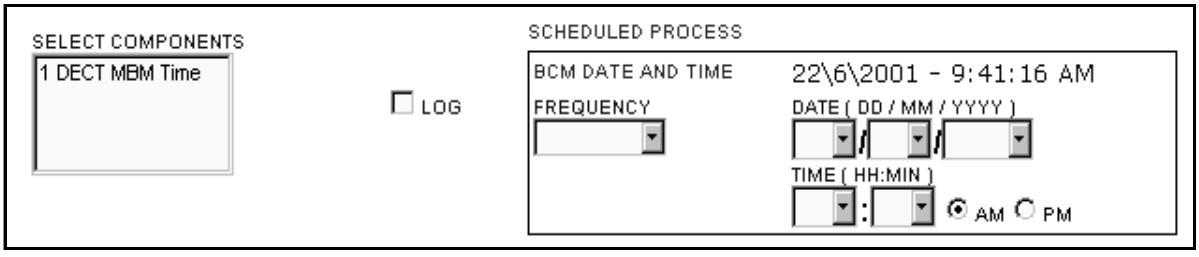
Figure 12 Choosing the BRU mode



5. Under **Load XML File**, choose **DECTTimeSync.xml.**
6. Under **Select the Mode**, choose **Synchronize**.

   After you choose Synchronize, additional selection boxes appear. Refer to Figure 13.

Figure 13 Choosing the components and timing

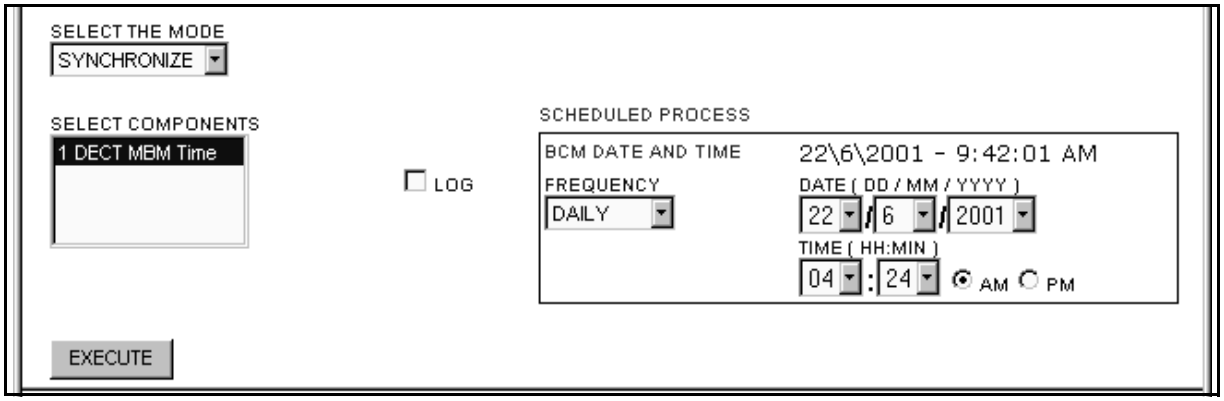


7. In the **Select Components** box, select **DECT MBM Time**.

8 In the **Scheduled Process** box, under **Frequency**, select **Daily**.

The current date appears in the Date boxes. Refer to Figure 14.

Figure 14 Setting the scheduled date and time



9 Use the arrows to select a time when you want the operation to be performed each day.

Warning: Ensure this time you choose occurs during a low-activity period and when no other DECT administrative processes are running, such as scheduled backups.

10 Click the **Execute** button. The Password for DECTOAM Backup dialog box appears.

11 Enter the DECT administrator password. The default password on a new system is `insta`.

12 Click the **Submit** button.

When the schedule is created, a message appears at the bottom of the BRU window in the status area.

Note: If you change the DECT Administrator password after this schedule is set, you must delete the scheduled task. To delete the task, click the **Schedule** link on the BRU window to display the task, then click the **Delete** button.

After the task is deleted, follow the above steps to set it again using the new password.

DECT Mobile Recording (Handset Subscription) wizard

Use this wizard to turn on a base station to allow handset subscription, which is described in Chapter 5, “Subscribing DECT Cordless Handsets,” on page 57.

You can also use this wizard to turn off mobile recording when you have completed the handset subscriptions.

Note: When one base station is set to on, then all other base stations are off.

Do not use this wizard until all other DECT module parameters are set.

Read “Before You Start” on page 47, and then refer to “Using the Wizards” on page 44 for the steps about running the wizard.

Before You Start

You need to know the following information before you run this wizard:

- What is the system password?

  Default: `insta`
- Which base station do you want to enable to allow terminal subscription?

  Refer to “Identifying Base Stations” on page 87 for more information about numbering.

  Note: Pick the base station that is in the most convenient proximity to where the handsets will be subscribed.

(Password)			
(base station)			
6-0	6-1	6-2	6-3
7-0	7-1	7-2	7-3

Filling Out the Mobile Recording (Handset Subscription) Wizard

The DECT Mobile Recording (Handset Subscription) wizard has two pages.

1. On the first page you enter the system password, if there is one, and choose the base station to set for mobile recording (handset subscription).
2. The second page displays a summary of your entries and presents the **Apply** button.

Turning off mobile recording

When you are finished subscribing the handsets, run the wizard again and select **None** in the Mobile Recording (Handset Subscription field) to turn mobile recording off.

Chapter 4
Installing the DECT Base Station

This chapter describes how to install the DECT base station according to the deployment site plan.

Ensure that you have a complete deployment and site plan before you start.

Installing Base Station Hardware

This section describes how to install the base station hardware.

Use only qualified personnel to install or maintain the DECT radio base stations.

Special Considerations

There are a number of considerations you need to take into account before you install a base station:

- Base stations must be positioned exactly where indicated on the site mapping plan. Any changes can affect transmission and reception.
- Avoid installing base stations on metallic surfaces or load-bearing walls made of reinforced concrete. If a metallic surface cannot be avoided, use a 50- to 80-cm extension bracket. Metal can impair transmission and reception.
- Place the base stations less than four meters from the ground. This makes it easier to maintain the base station and ensures correct radio coverage. Do not place stations lower than two meters.
- Do not install the base station behind obstructions, such as false ceilings.
- Always hang the base station in a vertical position.
- Leave at least 30 to 50 cm between co-located base stations.
- Install outdoors base stations in sealed cabinets.
- Leak-tight cabinets (reference DECT052) let you install DECT radio base stations outdoors without an external antenna. A mounting kit (reference DECT055) lets you secure the leak tight cabinet to a pole.

Note: Two base stations positioned side by side increase the channel capacity from four to eight possible simultaneous calls. Tandem base stations must be placed exactly 85 cm from each other. They also must be part of the same cell and trunk group.

- If you are using external antennas, refer to “Base Station Antennas” on page 54.

Installing the Base Station on the Wall

Follow these steps to properly attach the base station to the wall.

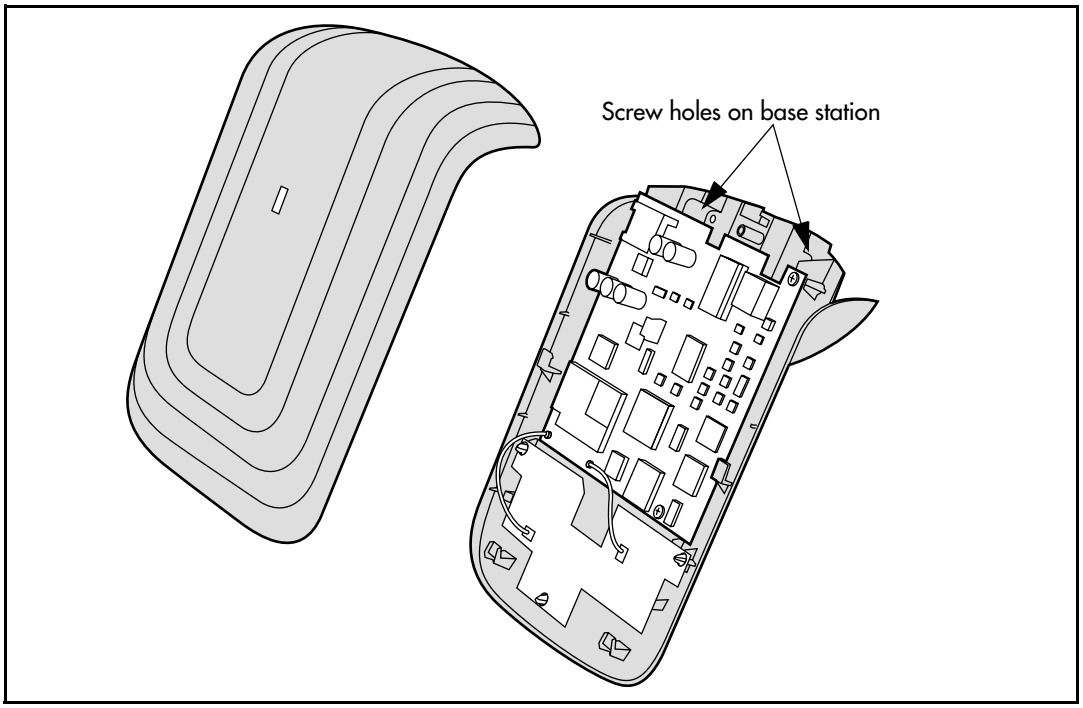
1 Locate the base stations according to the site survey and deployment information.

Position the base stations at the exact point determined by the deployment survey. Moving the base station by one or two meters can harm transmission and reception.

Ground yourself with an antistatic grounding strap before performing procedures inside the base station housing.

2 Slide the cover of the base station upwards, then pull it away from the back panel. Figure 15 shows the base station without the cover.

Figure 15 Base station with cover pulled away



3 Screw the back panel of the radio base station to the wall.

- Use two 3.5 x 25 mm wood screws with rawplugs. Insert the screws through the two holes located at the top end of the back plane of the base station.
- Install base stations vertically. Provide the required 5 cm (2-in.) clearance around the module for subsequent maintenance operations, as necessary.

Base station connections

Avoid sources of interference. Machines and wires can cause interference. Use Table 8 as a guide for laying out the Business Communications Manager cable to minimize the interference.

Table 8 Possible causes of interference

	Offices		Common areas	
Interference source	Power cables: total parallel length of 40 meters or less.	Fluorescent tubes	Neon signs, high interference sources[1]	Power cables: total parallel length
Installation distance	Stay at least 2 cm away.	Stay at least 30 cm away.	Stay at least 3 meters away.	Stay at least 30 cm away.
[1]Major sources of interference include industrial motors, inverters, rectifiers, transformers, high power cables, and so on. Cross these sources at a right angle to minimize the interference.				

1. Use individually screened pair cable between the base station and the Business Communications Manager.
2. **At either end, connect the two twisted pairs** to the center four pins in an RJ45 jack.

   You can use one of the following auxiliary equipment to make disconnection easier:

   — install a wall mounted RJ45 female connector and use a 10-cm long RJ45 ribbon cable

   — wire a long RJ45 male connector to directly connect the cable to the base station.

   The wire is a four-pair symmetrical, 6/10 shielded cable, series 278 or L122. Or you can use a category five certified cable, such as ATT cable P/N CPC 06. All cables must comply with ISO/CEI standard 11801.
3. Thread the cable through the upper cutout in the radio base station.
   a. Make the following measurements if you use existing cables:

      Crosstalk at 100 khz (to detect pair mismatch and to check transmission performance)

      Near-end crosstalk at not less than 60 dB

      Attenuation at 10 khz (alpha < 6 dB)

      Loop resistance (R loop = R termination + R cable)
4. If you use external antennas, attach the cables as described in "Attaching External Antennas to the Base Station" on page 55.

Note: Do not use an a.c. adaptor to connect the base station to a local power source unless power cannot be adequately provided through the Business Communications Manager cable.

5. Slide the cover back onto the back panel of the base station.
6. If your DECT module has been configured, you can now connect the base stations to the DECT module.

   If the DECT module has not yet been configured, refer to Chapter 3, "Configuring the Module," on page 37 before you continue.

Connecting the Base Station to the System

After the DECT module has been installed in the Business Communications Manager, and has been identified and configured, you can plug the base station cables into the DECT module. This section describes the steps for correctly installing one or more base stations.

Note: This procedure should also be followed if the base station cables have been removed during maintenance procedures on the Business Communications Manager or the DECT module.

Checking the Base Station Wiring

Before you connect the base stations and the DECT module, check the wiring and connectors with the tests described below.

- The base station requires an individually-screened paired cable for the connection between the station and the DECT module.
- Check the cabling between the DECT media bay modules and the base stations for continuity and match.

  These checks must be executed. Verify results for all connecting pairs before connecting the base station to the module.
- Check the RJ45 connector at the base stations and on the DECT module.
- Use impedance tests on the cable and base station assembly to trace the wires.
  The transmission and reception pairs measurements must match.
- Record the value measured for the transmission pair and deduct the distance between the radio base station and the DECT media bay module, using the information in Table 9

Table 9 Cable lengths and resistances

Distance	0.6 mm cable	0.5 mm cable	0.4 mm cable
100 m	18.2 ohms	24.0 ohms	34.0 ohms
210 m	31.6 ohms	43.8 ohms	64.8 ohms
330 m	46.3 ohms	65.4 ohms	98.4 ohms
450 m	60.9 ohms	87.0 ohms	132.0 ohms
570 m	75.5 ohms	108.6 ohms	165.6 ohms
690 m	88.9 ohms	128.4 ohms	196.4 ohms
800 m	103.6 ohms	150.0 ohms	230.0 ohms

Attaching the Base Station to the Module

There is a specific order and timing to connecting the base station to the DECT module. This section describes how to perform this process.

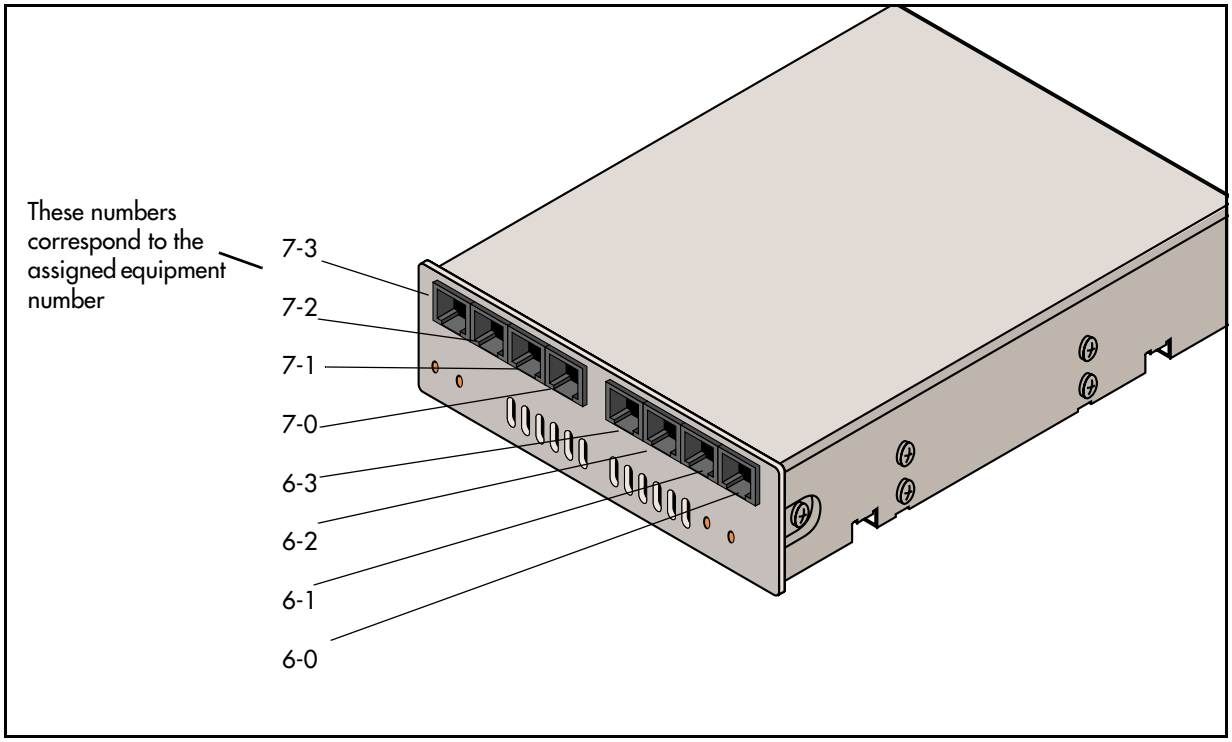
1 When the configuration is complete, connect the base station cables to the RJ45 jacks on the DECT media bay module. Refer to Figure 16.

Connect the cables sequentially, one at a time, waiting for each base station to begin the start-up phase before you connect the next base station cable.

Note: These RJ45 jacks correspond with the equipment numbers assigned to each base station on the DECT module. Refer to "Card Management" on page 73.

Refer to "Checking the Base Station Wiring" on page 52 for wiring information.

Figure 16 RJ45 connectors on the Media Bay Module



The base station has firmware installed at the factory. The DECT module checks this firmware load on startup and compares the version to what is on the module. If the versions differ, the DECT module automatically downloads the newer firmware to the base station during startup. This process takes several minutes.

Note: When you plug the base station into the port on the DECT module, the programming for that port is automatically assigned to the base station.

2 Monitor the LED on the base stations. Refer to Figure 17.

Figure 17 Status LED on outside of base station

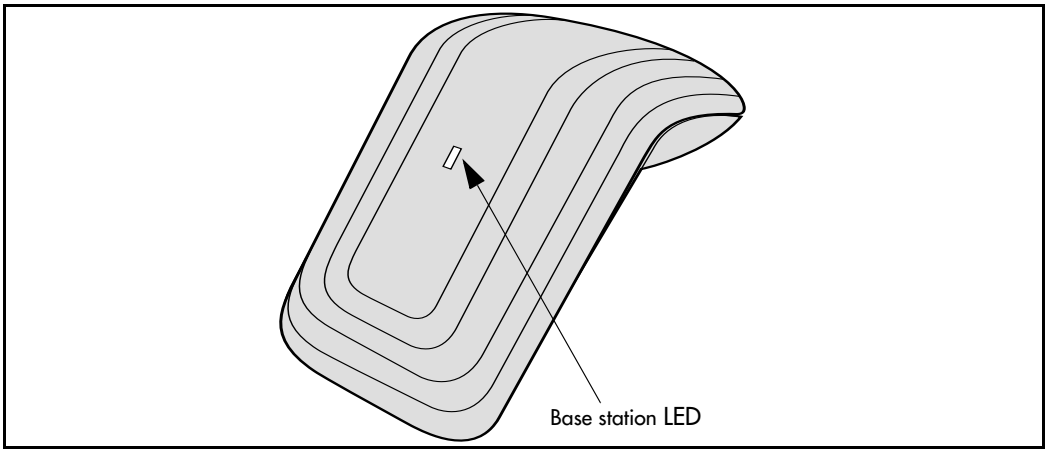


Table 10 describes the possible LED conditions:

Table 10 Base station LED conditions

LED off	Radio base station is not powered.
LED on	Radio base station is disabled or downloading.
Slow blink	Radio base station is loaded. Link with DECT module is operational.
Fast blink	Radio base station is operating and communication is established between the two ISDN channels. This also occurs when the all four channels are occupied.

3 When the base station LEDs are performing a slow blink, you are ready to subscribe the handsets.

Base Station Antennas

The base station comes with two internal antennas. However, you can remove these and connect the base station to one or two external antennas.

- **Internal antennas:** The base station has two quarter-wave antennas for diversity. The system automatically selects the best one.
- **External antennas:** Use a kit to add an external antenna. Where only one antenna is used, you can override the diversity function through the user interface.

  The *Business Communications Manager 2.5 Installation and Maintenance Guide* provides details about external installation and regulations.

Three types of external antennas can be used, as shown in Table 11. You also require an adapter (HT6176A).

Table 11 External antennas

Part number	Description
MA431X23	Omnidirectional with extension cord
MA431X24	Omnidirectional with extension cord
MA821X12	Bi-directional with 50 cm cable and molded TNC male connectors
Do not add extra cables to Bi-directional antenna P/N MA821X12. Adding extra cables can hurt the gain and directivity of the antenna. Place the antenna as close as possible to the base station. **Remotely site the other two antennas** (P/N MA431X23 and P/N MA431X24). For more information, please refer to the installation manual provided with the connecting kit for outdoor antennas.	

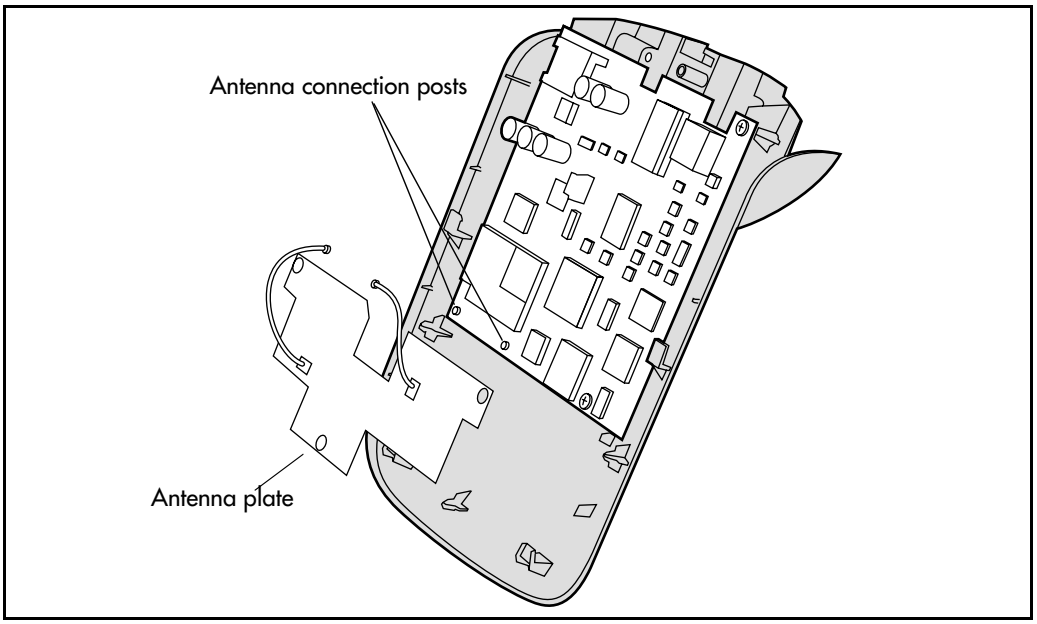
Attaching External Antennas to the Base Station

This section describes the steps for attaching the cables from an external antenna to the antenna ports on a base station.

1 Remove two internal antenna cables by sliding them up and away from the connectors on the board.

2 Remove the black antenna plate. Refer to Figure 18.

Figure 18 Removing the internal antenna plate



3 Secure cables to external antenna connectors ANT1 and ANT2
Use ANT1 if there is only one antenna.

4 Connect the external BNC connector for each antenna.

5 Slide the cover back onto the back panel of the base station.

Refer to "External Antenna Settings" on page 74 to configure the DECT module to access the external antennas.

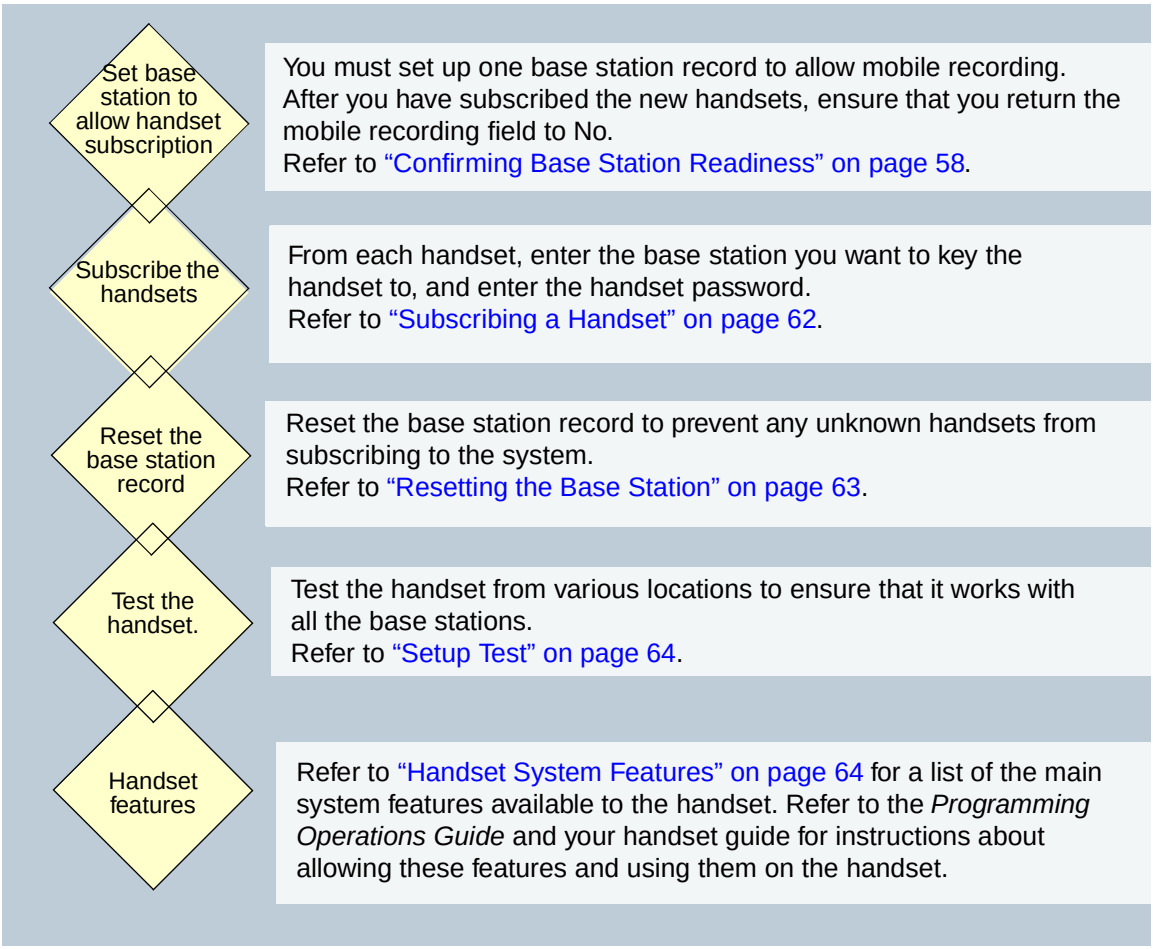
Chapter 5
Subscribing DECT Cordless Handsets

This chapter describes how to subscribe the cordless handsets. Subscription allows the handset to communicate with the DECT system. You must have at least one active radio base station to complete the subscription procedure.

Note: These steps are specific to the C4010 and C4020 handsets. However, all brands of handsets have a similar process. If your handset does not have a similar screen setup to the steps below, refer to the user manual enclosed with your set for specific instructions about entering the registration mode for that set.

Figure 19 provides an overview look at the process of subscribing the handsets.

Figure 19 Process for subscribing the cordless handsets


Set base station to allow handset subscription
You must set up one base station record to allow mobile recording. After you have subscribed the new handsets, ensure that you return the mobile recording field to No.
Refer to "Confirming Base Station Readiness" on page 58.
Subscribe the handsets
From each handset, enter the base station you want to key the handset to, and enter the handset password.
Refer to "Subscribing a Handset" on page 62.
Reset the base station record
Reset the base station record to prevent any unknown handsets from subscribing to the system.
Refer to "Resetting the Base Station" on page 63.
Test the handset.
Test the handset from various locations to ensure that it works with all the base stations.
Refer to "Setup Test" on page 64.
Handset features
Refer to "Handset System Features" on page 64 for a list of the main system features available to the handset. Refer to the Programming Operations Guide and your handset guide for instructions about allowing these features and using them on the handset.

Before You Start

Before you attempt to subscribe handsets to a new DECT module, ensure that the system can accept them.

If you are unsure, review the procedures in Chapter 8, “Programming DECT Handset Records,” on page 85, which describe how to set up the DECT media bay module and the Business Communications Manager.

Confirming Base Station Readiness

One of the base stations needs have mobile recording turned on before you can subscribe handsets.

Note: You can also do this procedure using the DECT Moble Recording wizard. Refer to Chapter 3, “Configuring the Module,” on page 42.

Use this procedure to check the state of the base station.

1. Open the Unified Manager.
2. Click **Resources/DECT**.
3. Under the Tools menu, click **Launch Maintenance Console**.

   The emulation screen appears.
4. Press <CTRL u> simultaneously to access the main menu.

Note: If you receive a request to confirm the type of emulation terminal you want to use, type **10** <ENTER>

   The main DECT maintenance menu appears.
5. Type **1** <ENTER>. The Telephony Management screen appears.
6. Type **8** <ENTER>. The Wireless Management screen appears. Refer to Figure 20.

Figure 20 Wireless Management Menu menu

7 Type **2** <ENTER>. The Wireless:Resources menu appears. Refer to Figure 21.

Figure 21 Wireless Resources Menu menu

```
1 TRUNK GROUP NAMES
2 TRUNK GROUP DEFINITION
3 BASE STATION ALLOCATION
4 BASE STATION DISPLAY
5 COVERAGE DISPLAY

ENTER YOUR CHOICE                    ..
```

8 Type **3** <ENTER>.

The Base Station Selection menu appears. Refer to Figure 22.

Figure 22 Base Station Selection menu

```
BY EQUIPMENT NUMBER          ..
OR BY ITS TRUNK GROUP        ..............
OR BY ITS CELL               ...............
OR BELONG TO AREA            ...............
```

9 On the first line, type **60** <ENTER>.

Note: These numbers correspond to the RJ45 jacks on the face of the DECT module, from left to right: 73, 72, 72, 70, 63, 62, 61, 60. These connections correspond, in turn, to ports on cards inside the module. All handsets are subscribed to the module and not the card port, therefore, you can subscribe all the handsets through one open port.

The Define Radio Base Station 6-0 DECT Access screen appears. Refer to Figure 23 on page 60.

a New system: Status: **disabled**, Moble Recording Allowed: *Yes*

Existing system: Status: **In service**; Mobile Recording Allowed: *No*

b New system: Move your cursor to Status, and use the space bar to find *In Service*.

The display shows that the base station is downloading. This takes from 30 seconds to 10 minutes, depending on whether the base station needs to up date the firmware.

Figure 23 Define Radio Base Station XX DECT screen

```
DEFINE RADIO BASE STATION 6-0 DECT
RAD. BASE DEFIN. 6-0 DECT
STATUS Disable                          .........
RAD. BASE TYPE                          4 CHAN.
BELONGS TO TRUNK GROUP                  [Trunk Group
Name)
MOBILE RECORDING ALLOWED                YES
FRAME TS 0->11 AFFECTATION              111111111111
TS NO MODIFICATION ..
0->9 FREQUENCY ALLOCATION               111111111111
- FREQUENCY NO MODIF
ANTENNA SELCTION                        AUTOMATIC
SYNCHRONIZATION                         VIA BIT FRAME
S
DISTANCE FROM MASTER BS                 D<100
METERES
TYPE OF BUS                             SHORT
```

c Exit the screen and wait for the base station to complete the download. If you go back into the screen, Status reads: *In Service*.

10 Subscribe the handset.

Refer to "Subscribe the Cordless Handset" on page 61.

Checking Handset Status

Follow these steps to check the handset status:

1 From the main menu, type **4** <ENTER> (Open Operation and Administration).

2 Type **6** <ENTER> (Operation Administration).

3 Type **6** <ENTER>(Display Statuses)

4 Type **3** <ENTER> Status of Data Links record. Refer to Figure 24 on page 61.

5 Telbore status changes from **Free** to **Incomm 1**

6 <ESC m> to view the base station activity.

Figure 24 Define Radio Base Station XX DECT screen

```
EQT NO.     TYPE        DN      STATUS      NO.LC
-------------------------------------------------------------------------------
AFISER      SERVER      010     FREE
SERVTL      SERVER      011     FREE
KITAXE      SERVER      012     FREE
SAESAE      SERVER      013     FREE
MUFACT      SERVER      014     FREE
SERV        SERVER      015     FREE
SERGIC      SERVER      016     FREE
SRVRHM      SERVER      017     FREE
DEBUG       SERVER      018     FREE
TELBOR      SERVER      019     FREE
ERF         SERVER      020     FREE
6-0         PLC 80      99900   DISCONNEC
6-1         PLC 80      99901   DISCONNEC

Note: card numbers 6-2, 6-3, 7-0, 7-1, 7-2, 7-3 are on page 2 <ESC m>
```

Subscribe the Cordless Handset

The procedure in this section describes how to activate the handset to communicate with the Business Communications Manager.

Handset Buttons

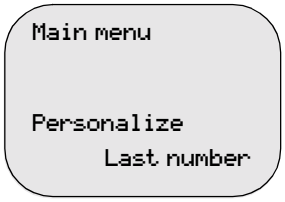
Table 12 provides a quick preview of the function buttons on the handset. You use these buttons in the procedures in this chapter.

Table 12 Buttons used during handset subscribing

Handset icon	Function
	Use to scroll through menus.
	Use to select and confirm menu items displayed at bottom of screen.
	Press to clear.

Subscribing a Handset

Use the handset you want to subscribe, and follow these steps:.

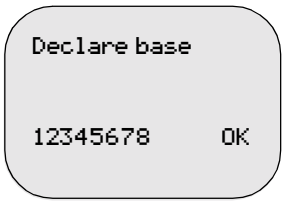


1 Press the ▶ button under Menu until you find **`Personalize/Last Number`**.

2 Press the ◀ button to open the Personalize menu

3 Press the ◀▬ key until *`Declare base number?`* appears.

4 Press the ◀ button under Declare



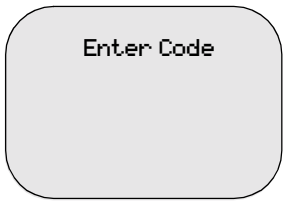
This message appears on the handset.

A blinking number indicates the default.

5 Press ◀ to confirm the default

Note: 1 is the common default. If another number is blinking, the handset has already been assigned to another system.

If the user only needs access to this DECT system, you can unsubscribe the 1 position. You can then subscribe the 1 position to the current DECT system. For instructions about how to unsubscribe a handset, refer to "Unsubscribing the Cordless Handset" on page 113



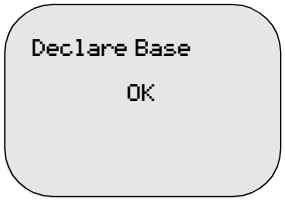
This message appears on the handset.

6 Enter the handset code using the handset digital keypad

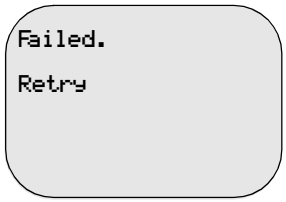
Note: This code is an eight-digit combination of the handset DN and the DECT handset password.

Enter the set DN, then add enough digits of the password to make eight digits.

For example: If you have five-digit DN 67890 and a password of 12345, the Code would be 67890123.



If this message displays (three seconds), the mobile is registered.



If this message appears, the handset is not describes.

The display returns to `Enter code`.

Resetting the Base Station

Follow these steps if you need to reset the basestation.

1 After you have subscribed or deleted handsets, go back and turn off the base station that has mobile recording enabled.

Note: You can also use the DECT Mobile Recording wizard to perform this procedure. Refer to "About the DECT Wizards" on page 42.

2 Enter the Unified Manager.

3 Click **Resources/DECT**.

4 Under the Tools menu, click **Launch Maintenance Console**.

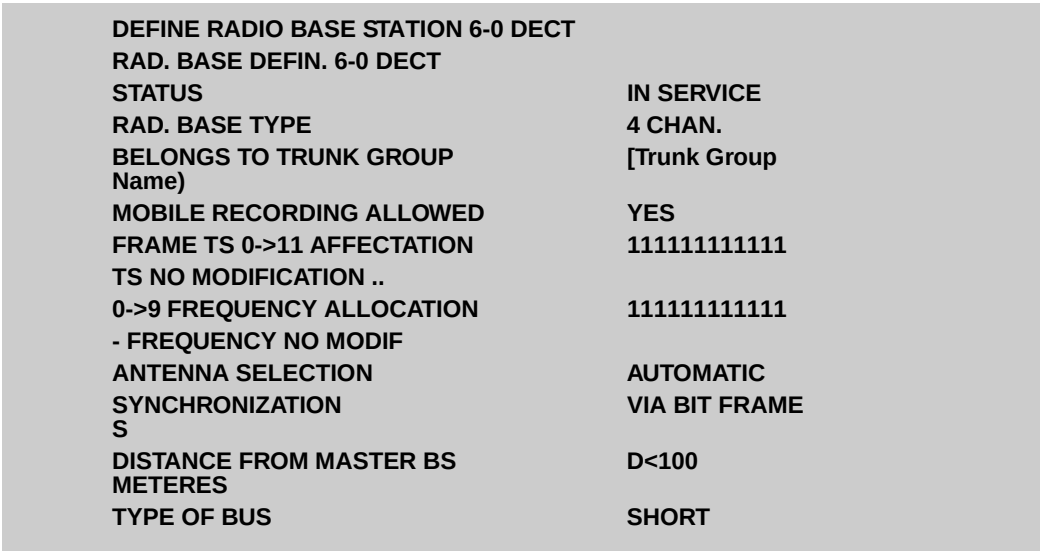
5 Navigate to the Wireless Resources menu, then type 2<ENTER>.

6 Go to **Base Station Selection** and choose **By Equipment Number.**

7 Type 60 <RETURN>.

The Define Radio Base Station 6-0 DECT Access screen appears. Refer to Figure 25.

Figure 25 Define Radio Base Station 60 DECT screen



8 Go to `Status` and press the space bar to find `Disable`, then press <ENTER>.

9 Change Mobile Recording Allowed to `NO`

Warning: Set `MOBILE RECORDING ALLOWED` to `Yes` only when you enter new handsets. At all other times, ensure that the record is set to `No` to prevent illegal entry of unauthorized handsets.

10 Go back to `Status` and press the space bar to find `IN SERVICE`, then press <ENTER> to enable the base station.

Setup Test

When the programming is complete, check that the system is operational.

1 Check that the base station LED indicates that the module is in service (LED blinks slowly). If the LED is on but not blinking, the module is downloading new information from the BCM. This can take as long as 10 minutes.

2 Check the system operation.

Perform the following operations in order to test the DECT service.

a Locate four handsets near separate base stations.

b Dial each set from another cordless handset.

c Ensure that the sets to talk to each other.

d Check the system for general operation. Refer to Table 13.

Table 13 Follow these procedures to troubleshoot the preliminary operations

Problem	Solution
Communication with the handset is interrupted while moving around between base stations,	Re-establish the communication from an operational base station, then continue checking the other base stations.
Communication cannot be established from a radio base station:	Check the configurations

Handset System Features

The cordless handset can perform the following features:

- twin to a fixed set to allow remote reception of calls
- make and receive calls from the handset, within the range of the system the handset is subscribed to as an independent set
- transfer and conference calls from and to the handset

Note: This feature uses two of the available eight lines per DECT when the handset is the primary and the other two calls are non-DECT calls.

- display an internal caller by name, and an external caller by number or name, depending on how the external line is set up.
- query the voice mail system using the mail extension or the Message Waiting button
- call forward calls, and to cancel call forward, to another set, to voice mail, or to an external number
- determine when a call gets forwarded: all calls, on busy, or if call is not answered

- make a second call while a call is in progress
- shuttle between two calls
- roam between DECT cells (handset-specific)
- call waiting indication if a call is received while the handset is busy on another call.

Note: The third call into a cordless handset receives a busy tone, depending on the type of call (internal/external), the type of line, and the DND on busy setting. If the portable user cannot be located, call capture rules apply.

Note: Refer to the *Business Communications Manager 2.5 Programming and Operations Guide* to configure these features for each handset DN.

Message Waiting Indicator (MWI)

DECT handsets have the ability to access mailboxes for both internal, stand-alone systems, and external voice mail systems accessed over a private network.

To initialize and set up the connection, you must directly dial the voice mail system through the handset and set up or change the account as required. Your voice mail administrator provides the number and your account access.

Programming the MWI Lamp Button

When a message occurs for a handset, the MWI lamp on the handset lights.

This button must be programmed with the voice mail access code so the user can press the button and be automatically connected to the voice mail system. The voice mail field must be set to *65 to allow the MWI feature (*65) to work.

To set up the feature, on the handset:

- Go to Menu/Personalize/VoiceMail/**VoiceMail Nr** and enter ***65**.
- Go to Menu/Personalize/VoiceMail/Access Nr and ensure that the field is blank.

When all messages have been retrieved, the MWI button lamp goes off. The user then presses the MWI button again to release the call and the user hears a reorder tone.

CallPilot Programming

If CallPilot is the voice mail system being used, ensure that the administrator includes the handset DN as the alternate DN for the desk set with which the DECT handset is twinned.

If the DECT handset is being used as a stand-alone set, then the CallPilot set up is the same as for any other Business Communications Manager set.

Auto-answer Issues

(security issue)

If your handset is set to Auto-Answer, you can be opening yourself to security issues. If your cordless DECT handset is set to Auto-Answer, your handset opens the line to the caller, whether you activate the handset or not. This occurs even if your voicemail is set to automatically go to voice mail after a number of unanswered rings,

Refer to your handset documentation for the steps required to turn Auto-Answer off on any handsets where this feature can be a concern.

Roaming

Roaming allows the DECT cordless handset to hook on to an authorized radio base station that provides the best possible signal.

Note: This feature is only available to C4010 and C4020 handsets.

A handset can also turn to idle (standard status: detached). In this state it is considered non-located. When the handset makes a call, it automatically returns to the located status.

Whenever an attempt is made to call a non-located handset, the call:

- forwards to the prime set for the line, if declared (recommended solution)
- receives a busy tone if no prime set is assigned

When the handset is turned on, DECT cordless handset scans the radio-frequency spectrum and measures the signals transmitted by various base stations in the area. If the handset receives a stronger signal during operation, the handset processes the information (RFPI, SARI list, etc.) sent by the prevailing radio base station. It checks if it can hook on to it, which depends on access rights.

The following occurs:

- If the access is permitted, the handset compares the radio base station RFPI to the LAL value, which is generated upon registration. It uses this calculation to determine if the radio base station belongs to a new roaming area (cell).
- If the comparison indicates that the location area has changed (with no communication established), the handset sends a roaming request to the radio base station. If the radio base station accepts, the handset remains synchronized to this base station for on-going analysis of the signalling channel (cell selection). At this stage, the handset is attached to this radio base station.

With a communication established, the behavior of a handset is similar. It initializes an external hand-over in order to keep the communication established when the radio base station changes.

Note: In case of access restrictions, the DECT module can refuse a cell change. If so, the handset waits a certain time before making new attempts.

Roaming on Outgoing Calls

Roaming is activated from the handset.

A handset sends a request for roaming to the DECT module in the following circumstances:

- when the registration procedure completes
- whenever the handset is turned on
- when external hand-over occurs
- whenever the handset changes cells

The handset uses the exchange protocol on the radio interface to understand that the stronger signal it is now connecting to belongs to a roaming zone. Further, the signal indicates it is a different base station from the one the handset was attached to.

The DECT module updates its routing tables and stores the (site-based) number of the cell occupied by this handset.

Direct Inward Roaming

Incoming calls route to this handset when its site and cell numbers are specified.

Chapter 6
Programming DECT Module Defaults

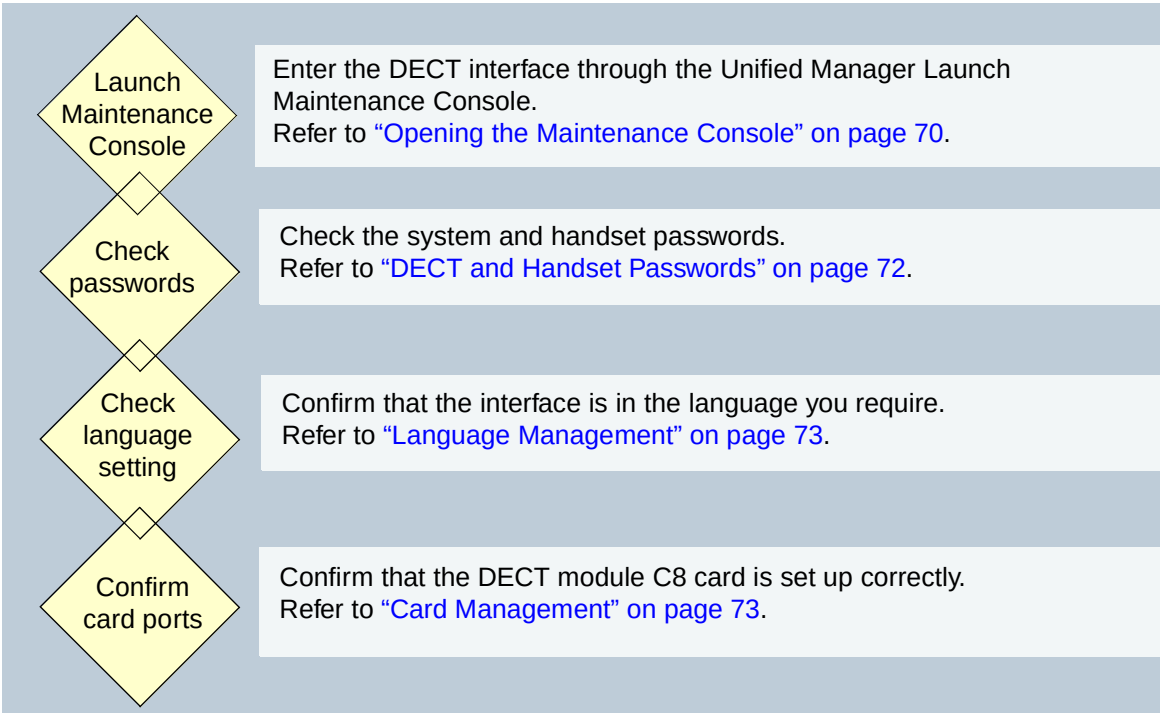
Use the DECT Configuration Wizard to set up the DECT module. However, if you need to check any of the DECT module parameters after the initial configuration of the module, you can go to individual records on the module to check or change settings. For instance, you might want to assign a new password.

This chapter describes the DECT interface menus that define the basic system parameters for the DECT module. A new DECT module comes with a set of defaults. Use these menus to check that the defaults are set correctly for your system or adjust the settings, as required.

You can access these menus through **Launch Maintenance Console** on the Unified Manager Tools menu when you select a DECT record.

Figure 26 provides a map of the default settings you need to check.

Figure 26 DECT interface, system management


Launch Maintenance Console
Enter the DECT interface through the Unified Manager Launch Maintenance Console.
Refer to "Opening the Maintenance Console" on page 70.
Check passwords
Check the system and handset passwords.
Refer to "DECT and Handset Passwords" on page 72.
Check language setting
Confirm that the interface is in the language you require.
Refer to "Language Management" on page 73.
Confirm card ports
Confirm that the DECT module C8 card is set up correctly.
Refer to "Card Management" on page 73.

Opening the Maintenance Console

To access the DECT module interface, use the maintenance console application in the Unified Manager. These steps describe the process of launching the application.

1. Enter the Unified Manager.
2. Click **Resources/DECT**.
3. Choose the Maintenance Selection tab.
4. Ensure that the DECT module has been chosen.
5. Under the **Tools** menu, click **Launch Maintenance Console**.

   A black window appears.
6. Press **10** to put the console into VT100 status.

Note: This step is not necessary if no prompt for VT100 appears.

7. Press <CTRL u> to access the main menu.

   Refer to Figure 27.

Figure 27 Main DECT maintenance menu

```
1    TELEPHONY MANAGEMENT
2    DATA MANAGEMENT
3    SYSTEM MANAGEMENT
4    OPERATION ADMINISTRATION
5    INSTALLER DATA

ENTER YOUR CHOICE                ..
```

System Management

Use the System management menus to:

- set a password for your DECT system and the handset
- select a default language, if required
- select ports on the DECT boards.

1 On the main menu, enter **3** <RETURN>

2 When prompted, enter the password, and press <ENTER>.

The System Management screen appears. Refer to Figure 28.

Figure 28 System Management menu

```
1    DATE AND TIME MANAGEMENT
2    CARD MANAGEMENT
3    RAM MESSAGE RECORDING
4    TERMINAL MANAGEMENT
5    PASSWORD MANAGEMENT
6    PARAMETER MANAGEMENT
7    SOFTWARE LOCK MANAGEMENT
8    INTEGR. BUFFER MANAGEMENT

ENTER YOUR CHOICE                ..
```

DECT and Handset Passwords

You can control the access to the DECT program using passwords. The system default password is *insta*. You can add, change, or delete the password, as required.

1 On the system management screen, type in **5** <RETURN>.

The Password Management screen appears. Refer to Figure 29.

Figure 29 Password Management menu

```
MANAGEMENT PASSWORD
READ-PROTECTED WRITE-PROTECTED     DONNE
- LAST ACCESS ON AT 01 01 80 00 00
READ NORMAL. WRITE NORMAL.         DONNE

ADMINISTRATION PASSWORD
READ. CHARGE COUNTER + LOG RESET   SUIVI
- LAST ACCESS ON AT 01 01 80 00 00
READ. CHARGE COUNTER RESET         SUIVI
INSTALLER PASSWORD                 .....
- LAST ACCESS ON AT 31 10 00 14 27
PASSWORD RECORD. MOBILE            12345.....
```

2 On the Installer Password line, enter a new password, or leave it blank.

3 On the **Password Record**. Mobile line, enter a registration number.

Note: This number is used as part of the registration key for the handset.

4 Press <CTRL j> to return to the System Management menu.

Note: If you change the DECT Administrator password, you must delete the scheduled time synch task. To delete the task, click the **Schedule** link on the BRU window to display the task, then click the **Delete** button.

After the task is deleted, you need to re-establish the time synch schedule.
For details, refer to "Setting Up the Module Time Synch" on page 45.

Language Management

If the menu system is not in the language you want, you must change the default language. If the menu is in the language you want, omit this section.

1 On the System Management menu, type **6** <RETURN> (Parameter Management).

The Parameter Management screen appears. Refer to Figure 30.

Figure 30 Parameter Management menu

```
MULTI-COMPANY MANAGEMENT              NO
MULTI-SITE MANAGEMENT                 NO
OPERATOR GROUP AUDIT ACTIVATED        NO
TYPE OF THE WIRELESS MANAGEMENT       DECT
CONSOLE TIME-OUT (SECONDS)            600
CURRENT LANGUAGE                      LANGUAGE 2
INSTALL. NAME MC 6501 C .....

NUMBER OF RECORDS     (current)   (requested)
- TELEPHONY TYPE      356         356
- DATA TYPE           10          10
- SERVICE TYPE        10          10
- MONITORING TYPE     24          24
```

2 Use the space bar to select the correct language.

3 Press <CTRL j> to return to the System Management menu.

Card Management

The Card Management menus define the status of the cards on the DECT module.

This menu is accessed from the System Management screen.

Only two of the seven cards on the DECT module relate specifically to DECT lines. These are cards 6 and 7, which each contain configurations for four ISDN-S ports. These ports are also referred to as equipment numbers.

Orientation Note: Each card has four ports	
Card 6 supports ports 6-0, 6-1, 6-2, 6-3	Card 7 supports ports 7-0, 7-1, 7-2, 7-3
These numbers correlate directly with the Equipment number found in these menus, and in the Unified Manager. In turn, they also match the port jacks on the DECT module. When set relationships to equipment numbers, you assign characteristics to the base station connected to that specific port.	

Ensure that the cards display the correct type of line. Also ensure they are `In Service` before you assign DECT handsets to the lines.

External Antenna Settings

If your base stations have external antennas, use the following steps to set the DECT interface to find them.

1 Enter the DECT interface and navigate to the Wireless Resources menu.

Refer to "Opening the Maintenance Console" on page 70.

2 On the The Wireless Resources menu, enter the port number the base station is connected to (60, 61, 62, 63, 70, 71, 72, or 73), then press <ENTER>.

The screen called Define Radio Base Station (station/equipment number) DECT Access appears. Refer to Figure 31

Figure 31 Base station screen

```
DEFINE RADIO BASE STATION (station/equipment number) DECT
RAD. BASE DEFIN. (station/equipment number      DECT
STATUS                                          IN SERVICE
RAD. BASE TYPE                                  4 CHAN.
BELONGS TO TRUNK GROUP                          [Trunk Group Name]
MOBILE RECORDING ALLOWED                        NO
FRAME TS 0->11 AFFECTATION                      111111111111
TS NO MODIFICATION ..
0->9 FREQUENCY ALLOCATION                       111111111111
- FREQUENCY NO MODIF
ANTENNA SELECTION                               AUTOMATIC
SYNCHRONIZATION                                 VIA BIT FRAME S
DISTANCE FROM MASTER BS                         D<100 METERS
TYPE OF BUS                                     SHORT
```

3 Scroll down to the Antenna Selection field and change the setting to External.

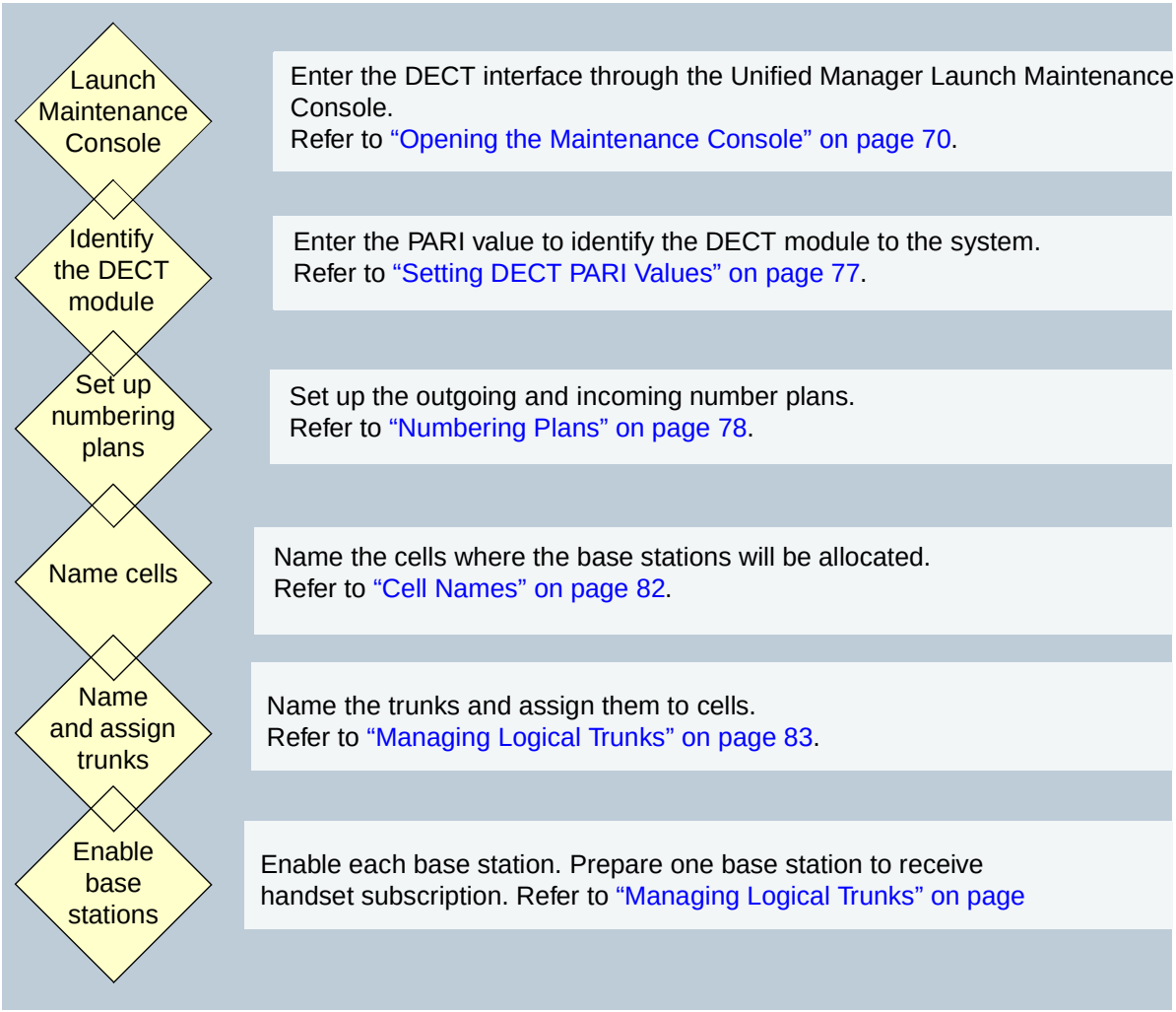
4 Press <CTRL u> to return to the main menu.

Chapter 7
Programming Numbering Plans and Base Stations

This chapter describes the DECT interface menus that define how the DECT will handle calls through the base station. Figure 32 provides an overview of the steps required.

If you ran the DECT Configuration wizard, this information is automatically configured. This section describes how to check each setting using the Maintenance Console.

Figure 32 DECT interface, trunk and cell management


Launch Maintenance Console
Enter the DECT interface through the Unified Manager Launch Maintenance Console.
Refer to "Opening the Maintenance Console" on page 70.
Identify the DECT module
Enter the PARI value to identify the DECT module to the system.
Refer to "Setting DECT PARI Values" on page 77.
Set up numbering plans
Set up the outgoing and incoming number plans.
Refer to "Numbering Plans" on page 78.
Name cells
Name the cells where the base stations will be allocated.
Refer to "Cell Names" on page 82.
Name and assign trunks
Name the trunks and assign them to cells.
Refer to "Managing Logical Trunks" on page 83.
Enable base stations
Enable each base station. Prepare one base station to receive handset subscription. Refer to "Managing Logical Trunks" on page

Planning Your Settings

To plan what you need to enter, refer to your DECT deployment plan.You also require access to the Business Communications Manager information.

Use Table 14 to identify the cells, trunks and base station allocations.

Table 14 Identifying cell, trunk and base station assignments

Cells	Trunks assigned	Base stations
Example: Cell CGCL22	two trunks are assigned 60CGTR22, 61CGTR22	connected to these base stations base station 1, base station 2

Use Table 15 to identify the numbering plan entries for your system.

Table 15 Identify the outgoing and incoming numbering codes for your system

DN length =		
Outgoing DNs and codes		**Incoming DNs**

Setting DECT PARI Values

DECT systems require a unique identity number to enable handset subscription. ThisPARI value number is located on the side of the module.

Follow these steps to enter the PARI value:

1 Enter the Maintenance Console and find the Wireless Management menu.

Refer to “Opening the Maintenance Console” on page 70.

2 Navigate to the Wireless Management menu. Refer to Figure 33.

Figure 33 Wireless Management menu

```
1 TOPOLOGY
2 RESOURCES
3 MOBILES

ENTER YOUR CHOICE              ..
```

3 On the Wireless Management menu, type **1** <ENTER>

The Wireless Topology menu appears. Refer to Figure 34.

Figure 34 Wireless Topology menu

```
1    NAMES OF CELLS
2    DECT PARAMETERS

ENTER YOUR CHOICE..
```

4 On the Wireless Topology menu, type **2**<ENTER>.

- The DECT parameters screen appears. Refer to Figure 35.

Figure 35 DECT parameters screen

```
PARI VALUE 0                      XXXXXXXXX
RANDOM VAL RECORDED               12.....
RS VAL RECORDED                   34.....
DIR. BEGINNING ASSIGNED TO PLL    999
```

5 Type <CTRL j> three times to return to the Telephony Management screen.

Telephony Management

Use the Telephony Management menus in the main screen to manage the base stations, handsets, and external trunks. Refer to Figure 36.

Figure 36 Telephony Management menu

```
1    EXTENSION DATA
2    EXTERNAL TRUNK DATA
3    NUMBERING PLAN
4    OPERATOR MANAGEMENT
5    CALL DISTRIBUTION MANAGEMENT
6    CALENDAR MANAGEMENT
7    PARAMETER MANAGEMENT
8    WIRELESS MANAGEMENT

ENTER YOUR CHOICE                ..
```

Numbering Plans

The Business Communications Manager and DECT module dialing plan and call routing must be compatible to allow full service to the DECT handsets.

Do not change any DECT settings unless you are familiar with the Business Communications Manager number plan.

Outgoing Numbering Plan

This list accessed with this procedure contains all the extensions you want to pass to the Norstar system. It excludes the DN range numbers for the DECT cordless handsets.

1. From the main DECT menu, type **1** <RETURN>.
2. From the Telephony Management menu, type **3** <RETURN>

   The Numbering Plan menu appears. Refer to Figure 37.

Figure 37 Numbering Plan menu

```
1   DIRECTION NAMES
2   USERS NUMBERING PLAN
3   INCOMING CALL NUMBERING PLAN
4   COMMON ABBREVIATED NUMBERS
5   DISPLAY ABBREVIATED NUMBERS
6   BARRED NUMBERS
7   SPECIAL ABBREVIATED NUMBERS
8   CALL REROUTING MANAGEMENT

ENTER YOUR CHOICE                ..
```

3 Type 2 <RETURN>

The Users Numbering Plan Menu appears. Refer to Figure 38.

Figure 38 Users Numbering Plan menu

```
1   ACCESS TO EXTENSIONS
2   ACCESS TO FEATURES
3   ACCESS TO PUBLIC EXCHANGE
4   ACCESS TO DIRECTIONS
5   SUFFIXES DEFINITION
6   DISPLAY NUMBERING PLAN
7   CLEAR NUMBERING PLAN

ENTER YOUR CHOICE                ..
```

TIP: To display the numbering plan that is currently in effect, type 6 <RETURN>.

4 On the Users Numbering Plan menu, type **4** <RETURN>.

5 Ensure that this list contains all the extensions you want to pass to the Norstar system.

Note: This list excludes the DN range for the DECT handsets.

a To change an entry, delete the existing entry, then add the new entry.

b To add a new entry, go to a blank line and add the entry.

Figure 39 shows a couple of examples.

— 9(*) = user dials 9, then any number of digits after (external line)
— 0(1) = user dials 0 (operator)
— 5(5) = user dials a five-digit extension starting with 5. (50000 to 59999)

Figure 39 Norstar directory numbers

```
SPECIFIC NUMBERS
1                    9(*).....
2                    0(1).....
3                    5(5).....
etc.                 .....
```

6 Press <CTRL j> to return to the Users Number Plan.

Users Numbering Plan

The Users numbering plan lists the range of handset extensions. This list provides handset-to-handset access on the network.

Follow these steps to add or change the Users Numbering Plan entries:

1 On the Users Number Plan menu, type **1** <RETURN> (Access to Extensions).

The Local Dialing list appears. Refer to Figure 40.

Figure 40 Local Dialing List

```
NUMBER OF DIGITS              3
NUMBER OF DIGITS TO RUB OUT   0
RANGE 1                       597-9
RANGE 2                       66-1
RANGE 3                       620-4
etc.
```

2 Ensure that Number of Digits corresponds to the DN length used by your Business Communications Manager system.

a To change the number, delete the current entry using the <Delete> key on your keyboard.

b Enter the new number, then press <RETURN>.

3 Range 1-12: enter the ranges of handset extensions.

This allows you to access other handsets on the network from your handset.

a Delete any existing range numbers if they are incorrect.

b Add the new range(s) of DNs (597-624).

Syntax: The syntax you use to enter numbers depends on the entry in the Number of Digits line. Refer to Table 16 for the default ranges. Adjust the numbers to fit the DN range on your own system.

Table 16 DECT defaults:

Default Range (597-624)	Range	3-digit entry
597-599	Range 1	597-9
600-619	Range 2	60-1
620-624	Range 3	620-4

Example: If you specified 3 for the number of digits, enter the numbers as follows:

- To enter the range 500-529, enter 50-2 for Range 1
- To enter 530 to 532, enter 530-2

4 Press <CTRL j> until you return to the Telephony Management screen.

Incoming Call Numbering Plan

The list you access with this procedure determines what calls to the handset are allowed. Ensure that the Default Number of Digits in this list is the same as the DN length entered in your Business Communications Manager and the DECT local dialing list.

1 From the Numbering Plan menu, type **3** <RETURN>

The Incoming Call Numbering Plan menu appears. Refer to Figure 41.

Figure 41 Incoming Call Numbering Plan menu

```
1   INTERNAL DIALING
2   ACCESS TO PUBLIC EXCHANGE
3   ACCESS TO DIRECTIONS
4   DID CORPORATE NUMBERS
5   DISPLAY NUMBERING PLAN
6   RESET NUMBERING PLAN

ENTER YOUR CHOICE                ..
```

2 Type **1** <RETURN> (Internal Dialing).

The Incoming plan: internal numb. list appears. Refer to Figure 42.

Figure 42 incoming plan: Internal numb.

```
DEFAULT NUMBER OF DIGITS                    3
NUMBER OF DIGITS TO DELETE                  0
SPECIFIC NUMBERS
1                                  .....
2                                  .....
2                                  .....
2                                  .....
2                                  .....
2                                  .....
2                                  .....
2                                  .....
REMOTE MAINTENANCE MODEM NUMBER    .....
OPERATOR CALL                      .....
CALL NUMBER OF TEST DEVICE         .....
```

3 Ensure that the Default Number of Digits is the same as the DN length entered in your Business Communications Manager and the DECT local dialing list. Refer to Figure 40.

4 Press <CTRL j> until you return to the Telephony menu.

Wireless Management

Manage the cells and virtual trunks through the Telephony Management/Wireless Management/ Topology menu.

Cell Names

Each base station is part of a cell. Use this procedure to identify the cells in your system.

1 At the main menu, type **1** <ENTER>.

2 On the Telephony Management screen, type **8** <Enter> to access the Wireless Management menu.

The Wireless Management menu appears. Refer to Figure 43.

Figure 43 Wireless Management menu

```
1    TOPOLOGY
2    RESOURCES
3    MOBILES

ENTER YOUR CHOICE              ..
```

3 At the Wireless Management menu, type 1 <ENTER>.

The Wireless Topology menu appears. Refer to Figure 44.

Figure 44 Wireless Topology menu

```
1    NAMES OF CELLS
2    DECT PARAMETERS

ENTER YOUR CHOICE..
```

4 On the Wireless Topology menu, type **1** <ENTER> to access the Names of Cells screen.

Note: For this release, a cell is equivalent to one base station. Therefore, you must name the number of cells for the number of base stations you connected to the DECT module.

5 Use the <TAB> key to move down the line to the cell names.

6 Enter a name for the cells you want to add.

Ensure the names are unique.

7 Type <CTRL j> to return to the Wireless Topology menu

Managing Logical Trunks

Use the Wireless Management Resources menus to:

- name logical trunk groups
- define how the trunk groups will operate

Follow these steps to access the screen where you can change the logical trunks settings:

1 At the Wireless Management menu, type **2** <ENTER> to access the Wireless Resources menu. Refer to Figure 45.

Figure 45 Wireless Resources menu

```
1    TRUNK GROUP NAMES
2    TRUNK GROUP DEFINITION
3    BASE STATION ALLOCATION
4    BASE STATION DISPLAY LIST
5    COVERAGE DISPLAY

ENTER YOUR CHOICE                ..
```

2 On the Wireless Resources screen, type **1** <ENTER>.

The Trunk Group Names screen appears.

3 Enter names for each logical trunk group.

Note: You must associate the cells with a logical trunk group name and relate this to a base station name. This procedure sets the communication path for the mobile handset within the DECT module.

Define a trunk group for each base station. Use the tab key to move through the menu.

4 Press <CTRL j> to return to the Wireless Resources menu.

5 On the Wireless Resources menu, type **2** <ENTER>.

6 Enter a trunk group name. Enter a name or press the space bar to scroll through the list to pick a name.

7 Press <RETURN>.

8 Enter the cell name, or use the space bar to scroll through the list to pick a name.

LOCATED IN CELL.....

9 Press <RETURN>.

10 Press <CTRL u> to return to the main menu.

Chapter 8
Programming DECT Handset Records

This chapter describes how to use the Maintenance Console to access the DECT interface to setup the base station record and to confirm the handset (mobile) numbers.

This chapter also describes how to add DNs for handsets to the DECT record. You must use this process if you add DNs after you run the DECT Configuration Wizard.

Confirming the DECT Settings

Verify in the DECT module interface that the handsets are set up correctly.

Opening the DECT Interface

This section describes how to work with the base station record and with the handset (Mobile) menus.

1. Enter the Unified Manager.
2. Click **Resources/DECT**.
3. Under the **Tools** menu, click **Launch Maintenance Console**.

   The emulation window appears.
4. If you receive a prompt to choose an emulation screen, type **`10`** <ENTER>.
5. Press <CTRL u> to access the main menu.

   The main DECT maintenance menu appears. Refer to Figure 46.

Figure 46 Main DECT maintenance menu

```
1    TELEPHONY MANAGEMENT
2    DATA MANAGEMENT
3    SYSTEM MANAGEMENT
4    OPERATION ADMINISTRATION
5    INSTALLER DATA

ENTER YOUR CHOICE                ..
```

6 Type **1** <ENTER>.

The Telephony Management menu appears. Refer to Figure 47.

Figure 47 Telephony Management menu

```
1    EXTENSION DATA
2    EXTERNAL TRUNK DATA
3    NUMBERING PLAN
4    OPERATOR MANAGEMENT
5    CALL DISTRIBUTION MANAGEMENT
6    CALENDAR MANAGEMENT
7    PARAMETER MANAGEMENT
8    WIRELESS MANAGEMENT

ENTER YOUR CHOICE                ..
```

7 Type **8** <ENTER>.

The Wireless Management menu appears. Figure 48 displays the start menu for the processes that follow.

Figure 48 Wireless Management menu

```
1    TOPOLOGY
2    RESOURCES
3    MOBILES

ENTER YOUR CHOICE                ..
```

Identifying Base Stations

Each base station has a record that defines how it operates. These records are assigned numbers called equipment numbers, which correspond with each port on the two DECT module boards that support the base station. These record numbers also correspond with each port on the DECT module. Refer to "Card Management" on page 73. Therefore, the base station plugged into a specific port on the DECT module uses the information in the corresponding base station record.

To assign change base station records, follow these steps:

1 On the Wireless Management menu, type **2** <ENTER>.

The Wireless Resources menu appears. Refer to Figure 49.

Figure 49 Wireless Resources menu

```
1    TRUNK GROUP NAMES
2    TRUNK GROUP DEFINITION
3    BASE STATION ALLOCATION
4    BASE STATION DISPLAY LIST
5    COVERAGE DISPLAY

ENTER YOUR CHOICE                ..
```

2 Type **3** <ENTER>.

The Radio Base Select menu appears. Refer to Figure 50.

Figure 50 Wireless Resources menu

```
BY EQUIPMENT NUMBER              ..
OR BY ITS TRUNK GROUP            .....
OR BY ITS CELL                   .....
```

3 Press <ENTER>.

Note: You can also enter an equipment number if you only need to access only one, specific card. (60, 61, 62, 63, 70, 71, 72, or 73)

The screen called Define Radio Base Station 6.0 DECT Access appears. Refer to Figure 51.

Figure 51 Base station screen

RAD. BASE DEFIN. (station/equipment number	DECT
STATUS	IN SERVICE
RAD. BASE TYPE	4 CHAN.
BELONGS TO TRUNK GROUP	[Trunk Group Name]
MOBILE RECORDING ALLOWED	NO
FRAME TS 0->11 AFFECTATION	111111111111
TS NO MODIFICATION ..	
0->9 FREQUENCY ALLOCATION	111111111111
- FREQUENCY NO MODIF	
ANTENNA SELECTION	AUTOMATIC
SYNCHRONIZATION	VIA BIT M FRAME S
DISTANCE FROM MASTER BS	D<100 METERS
TYPE OF BUS	SHORT

4 When you first install the base stations, this record shows that Status to be Disabled.

a Ensure that the Status is **Disabled**.

b Go down to Mobile Recording Allowed and set it to **YES**.

Warning: Set *Mobile Recording Allowed* to YES only for the period when you will be subscribing new handsets. At all other times, ensure this entry is set to No to prevent illegal entry of unauthorized handsets. You must disable the base station before you turn this setting on or off.

c Ensure that the screen displays the following parameters:

- A **Trunk Group** has been specified
- Rad. Base type is set to **4 CHAN**
- Synchronization is set to **VIA BIT M FRAME S**

d Go back to Status and put the base station back in service.

The LED on the base station goes solid while it checks with the DECT module for any updates. After the LED starts blinking, the base station is back in service. To check, press <CTRL j>, then return to the base station record.

5 Press <ESC n> to go to the next record.

6 Ensure that the screen displays the following parameters:

- A **Trunk Group** has been specified
- Rad. Base type is set to **4 CHAN**
- Synchronization is set to **VIA BIT M FRAME S**
- Mobile Recording Allowed is set to **NO**.

7 Go to the Status line and press the space bar to put the base station record in service.

The LED on the base station goes solid while it checks with the DECT module for any updates. After the LED starts blinking, the base station is back in service. To check, press <CTRL j>, then return to the base station record.

8 Repeat steps 5 to 7 for the rest of the base stations.

9 Press <CTRL j> twice to return to the Wireless Management menu.

Mobile Management

The DECT module interface handset numbers must match the DNs from the Unified Manager Terminals & Sets command menus. To check this, or to change the DNs on the DECT interface, access the module through the Unified Manager using the **Launch Maintenance Console** command.

Note: Default DECT module DNs:

New Business Communications Manager: 597-624

Upgraded 2.0 Business Communications Manager: 501-532

These defaults assume a system with a three-digit DN structure, and a Start DN of 221. If your system is different, use these numbers as guidelines to find the defaults to your system.

DECT modules can only use DNs from three to six digits long.

Warning: Resetting system DN lengths

If you changed the DN length for your system after a DECT module has been installed, you will no longer be able to record mobiles to the DECT module. You need to reset the DECT module: Resources/DECT/Tools menu/Reset Selected MBM. Then go into the module interface and confirm that the DECT-based DNs still match those on the Unified Manager.

Follow these steps to find the Module menu.

1 On the Wireless Management menu, type **3** <ENTER> (Mobiles).

The Wireless Mobiles menu appears. Refer to Figure 52.

Figure 52 Wireless Mobiles menu

```
1        CREATE MOBILE
2        DELETE MOBILES
3        DISPLAY MOBILES

ENTER YOUR CHOICE              ..
```

2 Use these menus to enter, delete and display a list of the cordless handsets you want to apply to this system.

Listing Mobiles

The DECT module comes with a default set of mobile extension numbers (DNs). Ensure that these numbers agree with the numbers that are assigned through the Unified Manager **Terminals & Sets** DN records.

Use these steps to access the list of existing DNs.

1 On the Wireless Mobiles menu, type **3** <ENTER>.

The Display Mobiles screen appears. Refer to Figure 53.

Figure 53 Display Mobiles screen

DN	TYPE	REC.	MODEL	PID
597	DECT	no	.....	
598	DECT	no	.....	
599	DECT	no	.....	
600	DECT	no	.....	
...				
624	DECT	no	.....	

2 Note which extension numbers are listed.

3 Press <CTRL j> to return to the Wireless Mobile menu.

Identifying Handsets

When you need to identify a mobile, or change the extension number (DN), follow these steps:

1 Go to the Base station record and ensure that `Mobile Recording Allowed` is set to **YES**.

Refer to "Identifying Base Stations" on page 87.

Warning: `Mobile Recording Allowed` must only be set to `YES` while you subscribe new handsets. You can also use the DECT Mobile Recording wizard to perform this operation. Refer to Chapter 3, "Configuring the Module," on page 42.

2 On the Wireless Mobile menu, type **1** <ENTER>.

The Create Mobile record appears. Refer to Figure 54.

Figure 54 Create mobile record

```
EXTENSION NUMBER                    (handset DN)
WIRELESS TYPE                       DECT
REFERENCE CELL                      (cell name)
DIRECTORY OF EMERGENCY EXTENSION .....
```

3 Enter or change a handset DN.

4 Press <CTRL j> to save the change.

5 Repeat steps 2 and 3 for all the handset DNs you need to enter.

6 Return to the base station record and ensure that:

- Status box reads: **`In service`**
- Mobile Recording Allowed is set to **`No`**

Warning: This entry must be set to `NO` to prevent illegal entry of unauthorized handsets.

7 Exit from the **Launch Maintenance Console** session.

Removing Mobiles

When you want to block a mobile from the system, or if you changed your DN strategy, delete the mobile extension number.

1 On the Wireless Mobile menu, type **2** <ENTER>.

2 At the prompt, type in the DN of the handset you want to remove, then press <ENTER>.

3 Press <CTRL j> to return to the Wireless Mobile menu, or <CTRL u> to return to the main menu.

Confirming the Handset Extension Record

The mobiles must have a route from the DECT to the Business Communications Manager system. This should be a default to your system, but ensure that the settings described in this section are correct.

To do this procedure, you need to know the DNs for the sets you install.

1 Navigate to the Telephony Management menu. Refer to Figure 47 on page 86.

2 Type **1** <ENTER>. The Extension Data menu appears. Refer to Figure 55.

Figure 55 Extension Data menu

```
1  EXTENSION CHARACTERISTICS
2  LOGICAL SUBSCRIBER MANAGEMENT
3  AUTOMATIC DIRECTORY NUMBER ASSIGNMENT
4  HUNT GROUP CHARACTERISTICS
   5ADD/DELETE EXTENSIONS
6  EXTENSION DIRECTORY
7  CATEGORY MANAGEMENT
8  PROGRAMMING EXTENSIONS
9  OTHER EXTENSION DATA
ENTER YOUR CHOICE                    ..
```

3 Type **1** <ENTER>. The Extension Characteristics menu appears. Refer to Figure 56.

Figure 56 Extension Characteristics menu

```
BY EQUIPMENT NUMBER                  .....

BY DIRECTORY NUMBER                  .....

RECORD DELETED IF DIRECTORY CHANGED  NO
```

4 Tab down to the **By Directory Number** field.

5 Enter the DN for the cordless handset, and press <ENTER>.

The Directory Number Selection record appears. Refer to Figure 57.

Figure 57 Handset record, page 1

```
DECT MOBILE                          EXTENSION
SUBSCR. STATUS IN COM.               IN SERVICE
DIRECTORY NUMBER                     16289

DID DN PLAN 1                        16289
EXTENSION NAME                       <USER NAME>
REFERENCE CELL
INTEGRATED VOICE BOX (IVB)           NC
SERVICE BEARER                       SPEECH
DIRECTORY OF EMERGENCY EXTENSIONS    ....
DAY CATEGORY                         INTERNATIO.
NIGHT CATEGORY                       INTERNATIO
DAY DISCRIMINATION RANGE             .......
NIGHT DISCRIMINATION RANGE           .......
```

6 Ensure the **DID DN plan 1** field has the same directory number as the previous field. This is the DN number of the handset.

Note: This step makes it unnecessary to assign the DNs to the Loop records in the Business Communications Manager.

7 Use <ESC m> to navigate to the second page. Refer to Figure 58.

Figure 58 Handset record, page 2

```
HOT LINE TYPE                        .....
INTERCOM TYPE                        NO MONITORING

PAGING GROUP NUMBER 1                0..
PAGING GROUP NUMBER 2                0..
ACCESS TO ROUTE TONSTAR              YES
ACCESS TO PAGING                     NC
PRIVILEGED SET                       NC
PICK UP PROTECTION OVERRIDE          NC
LOCKING ALLOWED                      YES
UNLOCKING ALLOWED                    YES
USER MOBILE RECORDING                YES
PICK UP PROTECTION                   NC
NIGHT CATEGORY OVERRIDE              YES
```

8 Ensure that **Access Route TONSTAR** is set to YES.

9 Use <ESC m> to navigate to the third page. Refer to Figure 59.

Figure 59 Handset record, page 3

CALL FORWARDING PROTECTION	NO
DYNAMIC PROTECTION	YES
DO NOT DISTURB ALLOWED	YES
INTRUSION ALLOWED	YES
INTRUSION ACCEPTED	YES
PRE-EMPTIVE REROUTING TO VOICE MAIL	NO
USE OF DISA FUNCTION	NO
CALL WAITING	ACCEPT AND BEEP
RETURN TO CONSOLE ON SPEC. TIME-OUT	NO
EXTERNAL FORWARDING ALLOWED	YES
ASSISTANT FORWARDING ALLOWED	YES
SPEAKER PAGING	YES
ID SENT TO PUBLIC NETWORK	A.I.D.
ID SENT TO PRIVATE NETWORK	A.I.D.
ID SENT CAN BE MODIF. FOR EACH CALL	NO

10 Ensure the **External forwarding allowed** is set to YES.

11 Exit to the Unified Manager.

Chapter 9
Maintaining and Upgrading DECT Software

This chapter describes how to backup and restore the data from your DECT module. A procedure for updating the DECT software and one for restoring the defaults on the current software are also included.

Backup and Restore DECT Module Data

One of the special features of the DECT system is that part of the processing for the cordless handsets occurs separately through the DECT module software.

As such, this data must be backed up, particularly prior to updating the software or before any updates on the Business Communications Manager.

This section describes the DECT backup and restore procedures.

Warning: Perform this procedure during slow periods, as it requires system resources.

Backing Up DECT Data

The following procedure describes the backup process in detail.

1. Start the Unified Manager.
2. Do the following to check that the correct DECT module is selected:
   a. On the navigation tree, click the **Resources** key.
   b. Click on **DECT**.
   c. Confirm the module name, or select the correct module.
3. At the top of the navigation tree, click on **BCM**.
4. Under **Tools**, click on **BRU**.
5. At the prompt, enter the user name and password for the supervisor account.

   A new Internet Explorer (IE) window appears.
6. On the IE window, beside **Load XML file**, choose **BCM Backup and Restore.xml**.

   The **Select the Mode** box appears.
7. In the **Select the Mode** box, click Backup.

8 In **Enter Destination,** supply the location where the backup is to be archived.

Note: After the backup file is created by the low-level backup utility, the BRU zips the file and moves it to an archive for safekeeping. This can be another volume on the BCM or it can be a networked drive shared by one or more Business Communications Managers, or other computers.

Field entries:

- type in the name of the destination
- leave in the default (E:\)
- press Volume and complete the dialog box

9 In **Select Components**, choose **DECT OAM Backup**.

10 Click on the **Execute** button.

Note: If you chose to leave the default destination in step 8, this message appears: `the drive E: is not recommended`. Press **OK**.

11 A dialog box appears prompting you to enter a report file name. Enter a report name at the bottom of the first column.

12 Click on the **Submit** button.

13 In the password dialog box, enter the DECT installer password, if there is one.

14 Click on the **Submit** button.

15 The backup begins.

If a Maintenance Console window is open when the BRU starts the DECT backup operation, the window will be disconnected.

Warning: Ensure no other users attempt to use the Maintenance Console window during the backup.

The BRU window, however, must always indicate that it is connected, and must stay connected during the entire process. The BRU process takes about 20 minutes. During this time the main BRU window displays the message that a script is being processed.

When the upgrade is complete, the system presents a completion dialog box and a message on the BRU window.

Restoring DECT Data

The following procedure describes how to restore data that you have archived.

1. Start the Unified Manager.
2. Do the following to check that the correct DECT module is selected:
   a. On the navigation tree, click the Resources key.
   b. Click on **DECT**.
   c. Confirm the module name, or select the correct module.
3. At the top of the navigation tree, click on **BCM**.
4. Under **Tools**, click on **BRU**.
5. At the prompt, enter the user name and password for the supervisor account.

   A new Internet Explorer (IE) window appears.

Note: The supervisor account user name and password are the user name and password you used to access the Unified Manager.

6. On the IE window, beside **Load XML file**, choose **BCM Backup and Restore.xml**.

   The **Select the Mode** box appears.
7. In the **Select the Mode** box, click **Restore**. Several more fields appear.
8. In **Enter Source,** supply the location where the backup is archived.

Note: This is the same file name that you used during the backup procedure in the **Enter Destination** field.

9. In **Select Components**, choose **DECT OAM Restore**.
10. Click the **Execute** button.
11. In the password dialog box, enter the DECT installer password, if there is one.
12. Click the **Submit** button.
13. The restore begins.

    If a Maintenance Console window is open when the BRU starts the restore operation, the window will be disconnected.

Warning: Ensure no other users attempt to use the Maintenance Console window during the restore process.

The BRU window, however, must always indicate that it is connected, and it must stay connected during the entire process. The BRU process takes about 20 minutes. During this time the main BRU window displays the message that a script is being processed.

When the upgrade is complete, the system presents a completion dialog box and a message on the BRU window.

DECT Module Software Upgrade

The following procedure describes how to perform a DECT interface upgrade.

1. Start the Unified Manager.
2. Do the following to check that the correct DECT module is selected:
   a. On the navigation tree, click the Resources key.
   b. Click on **DECT**.
   c. Confirm the module name, or select the correct module.
3. At the top of the navigation tree, click on **BCM**.
4. Under **Tools**, click on **BRU**.
5. At the prompt, enter the user name and password for the supervisor account.

   A new Internet Explorer (IE) window appears.
6. On the IE window, beside **Load XML file**, choose **BCM Firmware Upload.xml**.

   The **Select the Mode** box appears.
7. Choose **Upload**.

   Several more fields appear in the window.
8. Under **Select Components**, choose **DECT OAM**.
9. Press the **Execute** button.
10. In the password dialog box, enter the DECT installer password, if there is one.
11. Press **Submit**.
12. The software update operation begins.

    If a Maintenance Console window is open when the BRU starts the DECT software update, the window will be disconnected.

Warning: Ensure no other users attempt to access the Maintenance Console window during the software update.

The BRU window, however, must always indicate that it is connected, and it must stay connected during the entire process. The BRU process takes about 20 minutes. During this time the main BRU window displays the message that a script is being processed.

When the software update is complete, the system presents a completion dialog box and a message on the BRU window.

Warning: Module time synch

When you perform a firmware upload, the DECT module may lose time synchronization with the Business Communications Manager. To reset the time synch, refer to the steps in "Setting Up the Module Time Synch" on page 45.

Resetting the Module Interface to Default Values

If you redeploy a DECT module in another system, you can reset the module to the default settings and reprogram it using these steps.

Follow these steps to reset the DECT module values:

1. Start the Unified Manager.
2. Do the following to check that the correct DECT module is selected:
   a. On the navigation tree, click the **Resources key**.
   b. Click on **DECT**.
   c. Confirm the module name, or select the correct module.
3. At the top of the navigation tree, click on **BCM**.
4. Under **Tools**, click on **BRU**.
5. At the prompt, enter the user name and password for the supervisor account.

   A new Internet Explorer (IE) window appears.
6. On the IE window, beside **Load XML file**, choose **BCM Firmware Upload.xml**.

   The **Select the Mode** box appears.
7. Choose **Upload**.

   Several more fields appear in the window.
8. Under **Select Components**, choose **DECT Restore Defaults**.
9. Click the **Execute** button.
10. In the password dialog box, enter the DECT installer password, if there is one.
11. Click **Submit**.
12. The restore default configuration operation begins.

    If a Maintenance Console window is open when the BRU starts the DECT operation, the window will be disconnected.

Warning: Ensure no other uses attempt to use the Maintenance Console window during the operation.

The BRU window, however, must always indicate that it is connected, and it must stay connected during the entire process. The BRU process takes about 20 minutes. During this time the main BRU window displays the message that a script is being processed.

When the operation is complete, the system presents a completion dialog box and a message on the BRU window.

Chapter 10
Troubleshooting and Alarm Monitoring

This section describes how to monitor alarms on the DECT module and what actions to take when they occur.

Refer to the Business *Communications Manager 2.5 Installation and Maintenance Guide* and the *Programming and Operations Guide* for troubleshooting information about the Business Communications Manager.

Radio Base Station Fault on Startup

Connect a PHONIS set or an ISDN tester as a replacement for the radio base station. As a rule, this configuration checks the two ISDN pairs for continuity.

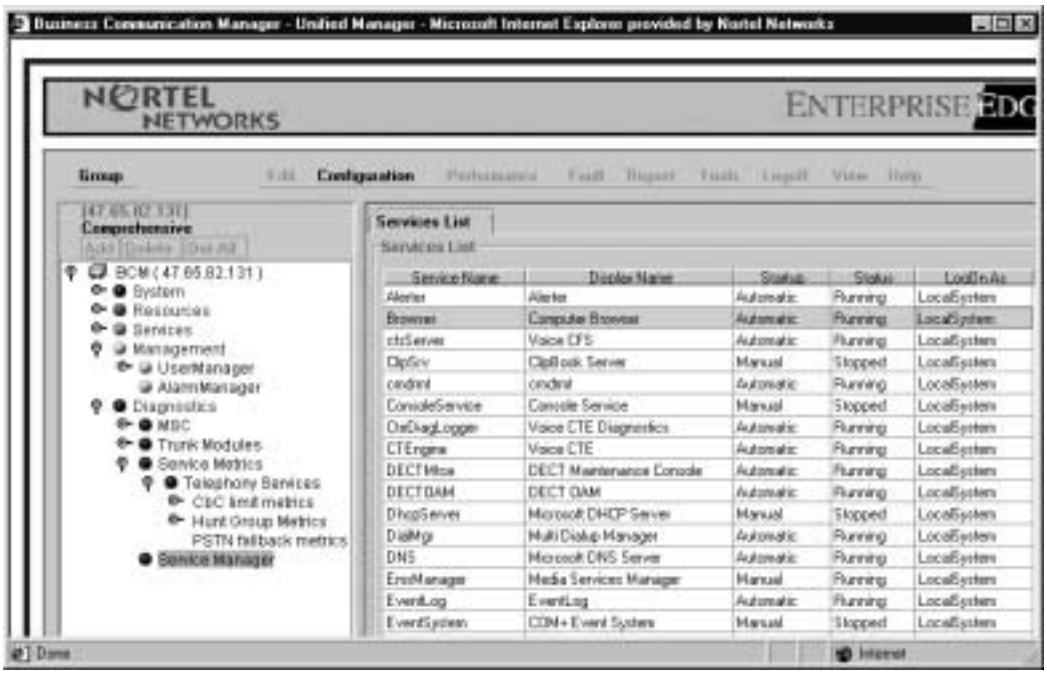
Business Communications Manager application control

The Diagnostics section of the Unified Manager contains Service Manager. This utility allows you to monitor the state of the DECT system and Maintenance console. It can also be used to start or stop the service.

1 Open the Diagnostics menu and click **Service Manager**. A list of services appears.

2 Scroll to find the DECT applications. Figure 60 shows the Services List.

Figure 60 Services list



3 Click **Configuration** and click on **Modify Services**.

The Services List for the service you selected appears.

4 In the Status box, click the status you want for the service.

Figure 61 shows the Services List screen.

Table 17 describes the options available.

Figure 61 Services list for DECT Maintenance Console

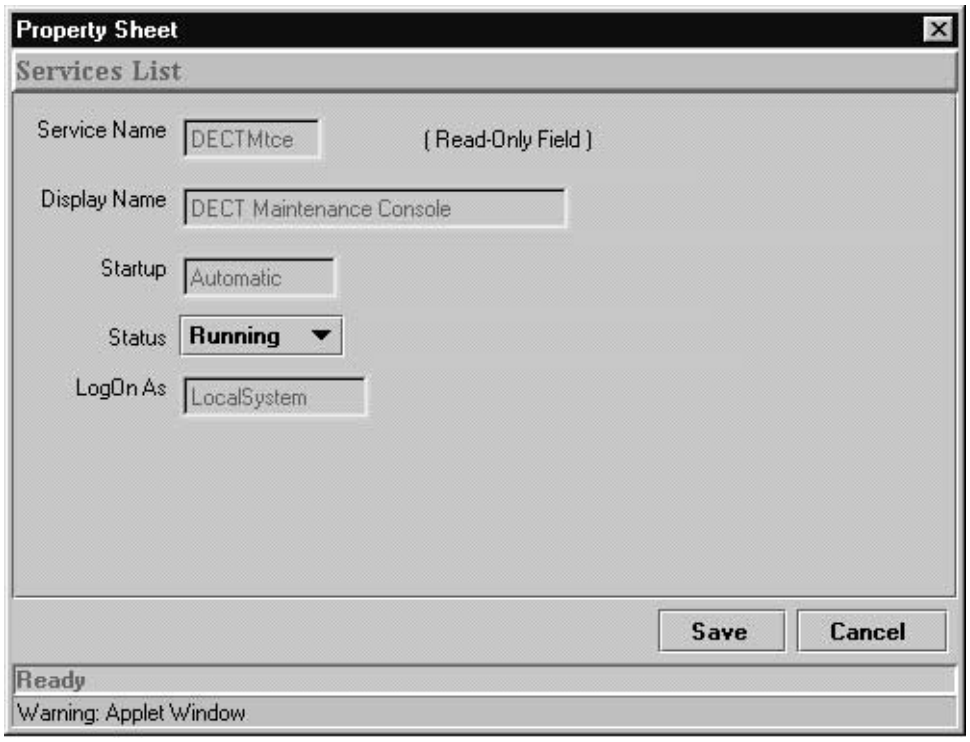


Table 17 Status options for DECT services

Status	Description
Running	Indicates the service is currently running
Start	Use this option to start the service on the Business Communications Manager
Stop	Use this option to close the service on the Business Communications Manager

5 Click the **Save** button to initiate the status change.

Setting Up the Maintenance Console

Use the Unified Manager when you want to administer or perform maintenance to the DECT module. This screen also allows you to start and stop DECT-related services.

Follow these steps to set up the Maintenance Console.

1 Go to **BCM/Resources/DECT**.

2 Click the **Maintenance Selection** tab.

3 Specify the module you want to view.

4 On the menu, click **Tools/Launch Maintenance Console**.

A new Internet Explorer window appears with a character-based window.

5 Type **10** to select VT100 Mode. **DO NOT press <ENTER>**.

6 Type <CTRL u> to access the DECT module menu.

Note: If the screen goes straight to the VT mode menu, you do not need to do this step.

7 Perform the required analysis and correction to the menu settings.

Viewing and Changing Service Status

This section describes the two screens you can use to view and change the status of the Maintenance Console Server and the Alarm Manager.

1 In the Unified Manager, go to **BCM/Services/DECT**

2 Click either the **Maintenance Console** or the **Alarm Monitor** tab.

3 Change the status, as required.

Refer to Table 18 for a description of possible status settings

Table 18 Possible status settings

Status	Description
Enable	This value is write-only. For a service that is enabled, one of the operational statuses appears when its Status box is read. When this value is set, the service is brought to the **Up** state.
Disable	This value can be either read or set. When read, this indicates that the component is disabled from operation. When set, it indicates the same, in addition to taking the component to a **Down** state before disabling.

Note: If the maintenance console server is disabled, a maintenance console session is not possible. If the Alarm Monitor service is disabled, DECT alarms are not recorded in the Event Logger. These services must always remain enabled.

Viewing Alarms

An enabled status for the Alarms Manager allows the alarms to write to a log on the NT server. Access this information through the Unified Manager.

1. Open the Unified Manager.
2. Under **BCM**, highlight **System**.
3. Click **Fault**, then click the **Fault**.

   An Alarm Banner appears, listing the number of alarms received under each priority, and the total number of alarms received. Refer to Figure 62.

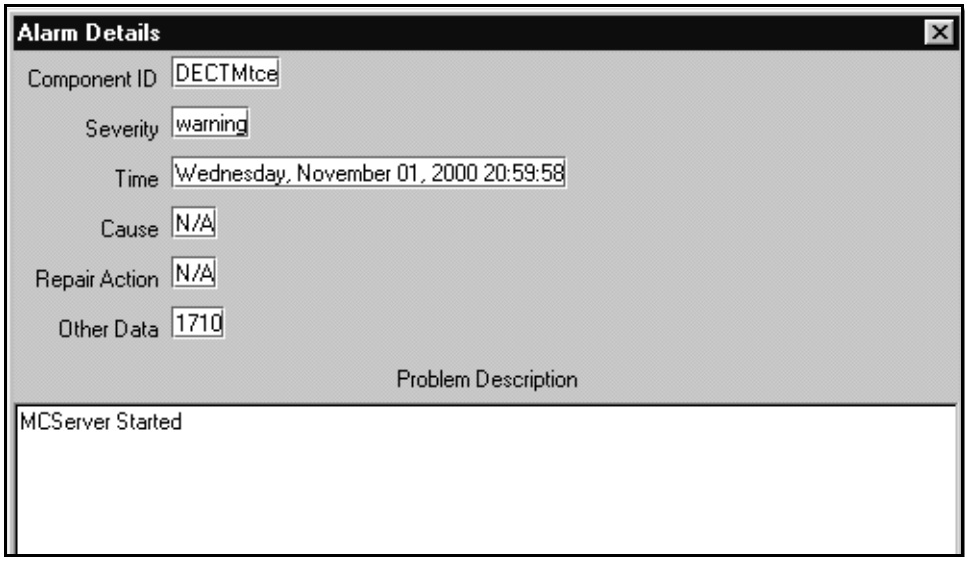
Figure 62 Alarm Banner

4. Click the button for the fault list you want to view.

   The Alarm Browser window appears. This window lists all the alarms in that category.
5. Click the error you want to review.
6. Click **Actions**, and then click on **Display Details**.

   The Alarm Details screen appears outlining error details. Refer to Figure 63.

Figure 63 Alarm Details screen



Base station/Handset Troubleshooting

Table 19 lists some possible problems and an explanation for the situation.

Table 19 Base station/handset troubleshooting

Problem	Description
The base station cannot be loaded. The base station state changes to **Faulty**.	Disable it and try to load the base station as a two-channel base. when software loading succeeds, disable it again and put it in service as a 4-channel base.
When trying to subscribe a handset to the system, it continues to display **Failed**.	Possible causes: • The handset has not been created in the software. • If the handset is subscribed to other bases, delete the bases and try again. • If all else fails, increase the PARI value by 1. After subscribing one or two handsets, change the PARI value back to the original value. Subscribe the rest of your handsets.
Bad speech quality	Check that the relevant base station is in service. If this is a temporary problem, then it is possible all the channels were busy and the handset was trying to access a more distant base station. If the problem does not correct itself, then cell coverage must be redesigned.
The handset name on the set is not the name that appears on called display sets.	Check the name on the DECT menu, as well as the name entered into the handset itself.
System performance presents problems such and with handovers, noise, one way speech in all areas.	Assuming that the site map and deployment requirements were followed exactly, take everything out of service and return it to service in sequence.

Changing the TCPPort

The IP port address must only be changed if some future feature requires this port.

To change the IP port address:

1. In the Unified Manager, go to **BCM/Services/DECT**
2. Click **Maintenance Console**.
3. Enter the new **TCPPort**.
4. Set **Status** to Disable.
5. Wait until the system indicates the port is disabled.
6. Set **Status** back to Enable.

Monitoring the DECT Module LEDs

The Power and Status LEDs on the module are both solid green when the module is operating properly. If an LED is off or blinking, use the table below to detect the cause.

Table 20 LED states

Power (working status)	Status (hardware status)	Details
Off	Off	No power applied to the module or failure of module power converter.
On	Off	Field Programmable Gate Array (FPGA) not downloaded. This indicates that the MSC has not started correctly.
On	Blinking	Operation problem: • no DS256 link detected • DS256 frame alignment lost • Bandwidth not allocated • Module is in maintenance state **Note:** DS256 is the bus that connects the media bay modules to the MSC.
Blinking	Blinking	Hardware problem • partial failure of power converter • thermal overload • fan failure
On	On	Module is ready to operate.

Appendix A
Quick Reference to DECT Module Programming

If you have an existing DECT system that you do not want to run the DECT Configuration Wizard on, you can use the Maintenance Console in the Unified Manager to accomplish the configurations you require.

Familiarize yourself with opening the DECT interface. Refer to ”Opening the Maintenance Console” on page 70 of the *DECT Install and Maintenance Guide*. Details about setting up system lines and sets are provided in the *Business Communications Manager 2.5 Programming and Operations Guide*.

The chart on the following two pages provides the menu names and a brief description of the information required for each step of programming your DECT module, base stations, and handsets using the Maintenance Console.

DECT Programming Quick Reference Guide

Main DECT interface menu	1 Telephony Management	1 Extension Data 2 External Trunk Data 3 Numbering Plan 8 Wireless Management	(Refer to each section, below)
	3 System Management	2 Card Management 5 Password Management 6 Parameter Management	(Refer to each section below)
System Management	Password Management	Installer Password Password Rec. Mobile	DECT interface access code (optional) handset code, required for handset subscription
System Management	Parameter Management	Parameters screen	Current Language Language #
System Management	Card Management	Cards screen	Cards 6 and 7 only: Line type= ISDN S In service
Telephony Management Wireless management	1 Topology 2 Resources 3 Mobiles	1 Names of Cells 2 DECT Parameters 1 Trunk Group Names 3 Base station allocation 1 Create Mobiles 2 Delete Mobiles 3 List Mobiles	(see each section below)
Wireless Management	1 Topology	2 DECT Parameters	PARI VALUE 0 (module-specific)
Telephony Management	3 Numbering Plans	2 Users Number Plan	4 Access to Directions Prompt by name:NOSTAR Norstar directory entries (extensions to be passed to the handset)
			1 Access to extensions Number of Digits (match BCM DN length) Range 1 ....., enter handset DN ranges, match BCM handset DN range
		3 Incoming Numbering Plan	1 Internal Dialing Default Number of Digits (match BCM DN length)
Wireless Management	1 Topology	1 Names of Cells	cell names (alphanumeric, make descriptive of BS locations)
Wireless Management	2 Resources	1 Trunk Group Names	Trunk groups (trunk names) Located in (cell name for trunk)

DECT Programming Quick Reference Guide

		3 Base Station allocation	By equipment number: 6.0 Status: disabled Mobile recording allowed: Yes (for one station only; set all other stations to No) Trunk group: (from list) Rad. Base type: 4 CHAN Synchronization: VIA BIT M FRAME Enable base station. Go to next record
Wireless Management	3 Mobiles	3 List Mobiles	Shows existing listed mobiles and current state
		1 Create Mobiles	Extension Number (handset DN) Wireless type DECT Reference cell (cell name)
		2 Delete Mobiles	Enter DNs you want to remove.
Telephony management	1 Extension data	1 Extension Characteristics	By Directory Number (DN number of handset or leave blank to view all) Handset record page 1: Directory Number and DID DN PLAN 1 have same number. page 2: Access to Route TONSTAR: Yes page 3: External forwarding allowed: Yes
Business Communications System, Unified Manager settings			
Resources/Media Bay Module/	Bus ##	Ensure module type is Trunk Module	
Services/ Telephony services/ Terminals&Sets	Handset DNs	Set up handsets Default DNs: • New Business Communications Manager: 597-624 • Upgraded 2.0 Business Communications Manager: 501-532	
Services/ Telephony services/ Terminals&Sets	DN of twinned desk set	Enter handset DN in Answer DN	
Unified Manager, various menus		Set up lines, etc., as for other system sets Refer to the *Programming and Operations Guide*.	
Handset subscription			
Delcare Base Number	1		
Enter Code	(eight digits)	Enter the set DN, then add enough digits of the mobile password to make up eight digits.	
Test handsets on system			

Appendix B
Cordless Handset Verification

If the C4010 or C4020 handset does not verify correctly, use the following section to determine if it is properly subscribed and correctly assigned to the DECT system.

Note: If the handset does not follow these procedures, check the user manual that came with the set for specific troubleshooting information.

Handset Buttons

Table 21 provides a quick preview of the function buttons, that you use in the procedures in this chapter.

Table 21 Handset programming buttons

Handset icon	Function
	Use to scroll through menus.
	Use to select and confirm menu items displayed at bottom of screen.
	Press to unsubscribe.

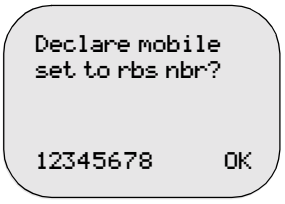
Determining Handset Subscription

If the handset is already subscribed to the base station number you want to use, you need to unsubscribe the handset from that number.

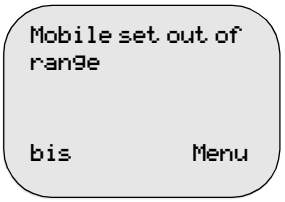
This procedure describes how to find out if the handset was previously subscribed.

1 Turn on the handset.

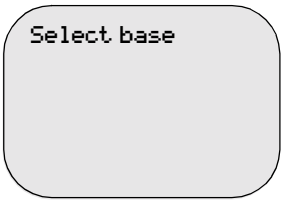
2 Do one of the following:



If this message appears, press ◀ to confirm `OK`, then subscribe the handset.



If this message appears, press ◀, then go to step 3.



3 Press the ◀◀ key until `Select Base` appears.

4 Press the ◀ button, under `Select Base`.
The system displays the radio base station numbers already in use.

5 If the number you want to use has already been subscribed, refer to "Unsubscribing the Cordless Handset" on page 113.

Unsubscribing the Cordless Handset

This section describes how to unsubscribe the handset from a base station number.

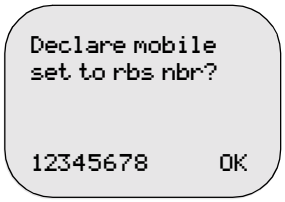
Note: If your handset screen is different from that shown below, refer to the user manual that came with your handset for specific details.

1 Press the ◀ button under Menu.

2 Press the ◀▬▶ key until `Declare` appears.

3 Press the ◀ button under Declare.

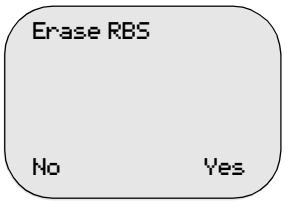
This display appears.



4 Scroll to select the base station ▶ ◀.

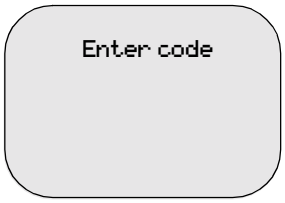
5 Press the ◀ button, to confirm `OK`.

This display appears.



6 Press the ◀ button, to confirm `Yes`.

This display appears.



7 Press the C button.

The mobile is unsubscribed and the screen returns to the main menu.

8 Subscribe the handset to the DECT system. Refer to "Subscribe the Cordless Handset" on page 61.

Testing the Cordless Handset

Test subscribed handsets by walking around the transmission area and confirming that the handset works. This test also confirms that the base stations can transfer the signal, as required.

Use the following procedure to perform more detailed tests, as required.

Warning: This testing must be carried out only by authorized personnel. Entering incorrect commands can cause the handset to malfunction.

There are two ways of testing the handset: while in use and while in the idle mode.

1 Testing the handset while in use:
   - **a** Press the ◀ button to select Menu
   - **b** Press keys 1, 5 and 9 simultaneously.
   - **c** Exit this menu by holding down the C button.

2 Testing an idle handset:
   - **a** Ensure the set is in the idle mode.
   - **b** Press the ◀ button to select Menu.
   - **c** Press 7 and 6 simultaneously.
   - **d** Exit this menu by holding down the C button.

The handset test screen shown in Figure 64 displays various icons.
Refer to Table 22 on page 115 for the definition of each icon.

Figure 64 Test mode display screen

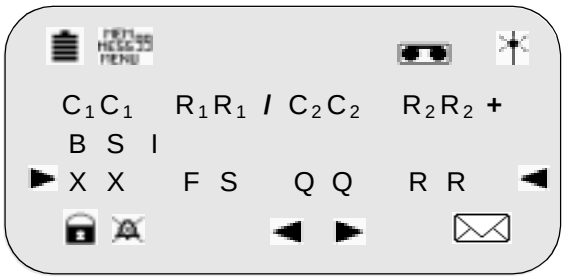


Table 22 Test mode icon definitions

Icon	Description
	Indicate that PP is in connected mode A + indicates that more than two candidate fixed parts exist. Use the arrow keys to display the other fixed parts.
	This symbol appears if access rights requests are supported by the base station. Bit A44 of high layer capabilities is set.
	This symbol appears if the base station is busy, that is, when the RFP status is set or Blind Slot Information indicates that all the DECT slots are in use.
	MEM, MESS99 and MENU appear on the display to show periodic scanning of the DECT channels by the cordless handset. the number displayed is a state value of the MAC layer (For software development) (9What does this mean?))
	This symbol appears during a call if external handover is supported; that is, if bit A45 of higher layer capabilities is set and the Ext h/o indicator has been received from the base station.
XX	RPN (Radio Part Number)
F	Frequency used
S	Slot number used
QQ	Quality (Maximum value: 40 Hex)
RR	RSSI level
C1C1/R1R1	RPN and RSSI of the best candidate FP for roaming or handover
C2C2/R2R2	RPN and RSSI of the second best candidate FP for roaming or handover
C3C3/R3R3	RPN and RSSI of the third suitable candidate FP for roaming or handover
C4C4/R4R4	RPN and RSSI of the third suitable candidate FP for roaming or handover
C5C5/R5R5	RPN and RSSI of the third suitable candidate FP for roaming or handover
C6C6/R6R6	RPN and RSSI of the third suitable candidate FP for roaming or handover
C6C6/R6R6	RPN and RSSI of the third suitable candidate FP for roaming or handover
C8C8/R8R8	RPN and RSSI of the third suitable candidate FP for roaming or handover

Glossary

Antenna diversity

The base station has two internal antennas, which allows it to choose the strongest signal to send and receive.

Authentication key

This is part of the authentication procedure for the portable. When a call starts, the fixed part transmits a challenge to the portable part. The portable part calculates the proper response and sends it. After every call setup, the fixed and portable parts calculate a new authentication key for the next call.

Business Communications Manager

A PBX-like machine attached to the radio base stations that handles call processing, voice messaging, data routing and telephony.

Cell

For the media bay module, the term cell includes a series of radio base stations representing the basic roaming entity for cordless handsets. The MBM actually knows the cell hosting this cordless handset but does not know the radio area, which is the radio base station to which this set is attached. A message sent to a cordless handset by the MBM is sent to all radio base stations under this cell. Consequently, a cell typically represents a homogeneous space. One cell contains a maximum of eight base stations.

DSAA

DECT Standard Authentication Algorithm. Used to create the User Authentication Key.

EIC

Equipment Installation Code. This is a distributor reference, for example, Matra Nortel Communications, managed by ETSI.

4-channel station

Refers to a radio base station that can handle four calls simultaneously.

FPN + FPS

Fixed Part Number and Fixed Part Sub-number. This is a network user reference managed by Matra Nortel Communications.

Erlang

One Erlang is an average traffic load caused by one basic DECT speech connection, using one frequency/timeslot pair, all the time.

Handover

A cordless handset can abandon one radio connection for another, either to the same radio base station or to another one.

Map

A chart prepared after the site survey, showing the positions of the radio base stations, the areas they cover, and the cells into which they are grouped.

Media bay module

This is a modularized box containing the hard connections to various peripheral telephony equipment. Media bay modules are installed in bays on the Business Communications Manager or a Business Communications Manager extension cabinet.

Mobile

The DECT cordless handset.

Overlapping Base Stations

These radio base stations have the same radio coverage. Each base station has the same radio coverage, for example aisle, floor, but manages different groups of cordless handsets.

PARK

Portable Access Right Key (determines the right for this DECT cordless handset)

Password

A secret PIN code used by the fixed and portable parts to establish the right of the portable to use the system.

Radio area

Radio area refers to the space in which this radio base station radiates. If detected by traffic conditions (number of simultaneous calls in this office), several radio base stations can be installed side by side and define almost the same Radio Area. In this case, these radio base stations are referred to as Overlapping Base Stations. The size of each Radio Area varies according to the topology.

Radio area centre

Location of the radio base station or antenna connecting up this radio area.

Radio base station

A radio base station incorporates two identical omni-directional transceivers. A coverage area for a radio base station is in free space, spherical in shape and centred at the radio base station. A radio base station must belong to a trunk.

Radio range

Distance between the radio area center and its boundary limit. A radio range is environment dependent.

Rand f

Random f number, a sequence of up to 10 digits used to calculate the User Authentication Key.

RJ45

The jack used on the radio base stations and the media bay module.

RNIS-S0 terminals

Réseau Numerique (à) Integration (de) Services (French for ISDN).

Site survey

This is the process of surveying the area where you want to locate the base stations and mapping out the best area to mount the components for best reception.

Traffic level

The number of telephone calls being made in a particular area.

Trunk

A communication line that connects the PBX to the central office. A trunk must be associated with a cell. A DECT trunk and a PBX MC 6500 trunk are two different concepts.

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